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The cooperative method for providing dairy replacements in southern New England

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THE COOPERATIVE METHOD FOR PROVIDING DAIRY REPLACEMENTS IN SOUTHERN NEW ENGLAND

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Outline

I. Statement of the problem:

A. Numbers and sources of replacements.

B. Present practices followed to provide replacements and reasons for same.

C. Character of replacements

1. From a disease viewpoint

2. From a production viewpoint

II. Cooperative organization as one solution of the problem.

A. Cooperative purchase of replacements.

1. Existing organizations of this type.

a. Location, organization and methods of operation.

b. Discussion of organization and reasons for success or failure

c. Results as regards New England Dairymen.

2. Converse arrangement of cooperative sales for comparative purposes.

a. Location, organization and methods of operation.

b. Discussion of organization and reasons for success or failure.

c. Results as regards New England dairymen

3. Proposed plan of organization for an association for the cooperative purchase of dairy replacements.

a. As a department of an existing purchasing organization.

(1.) Advantages and disadvantages.

b. As a separate and distinct organization.

(1.) Advantages and disadvantages.

B. Cooperative raising of young stock

1. Existing organizations

a. Location, organization and methods of operation.

b. Discussion of organization and reasons for success or failure

2. Proposed plan of organization for an association for the cooperative raising of dairy replacements.

a. Advantages and disadvantages.

III. Summary and conclusions.

Purpose: This study was planned as an attempt to determine whether or not the dairy replacements coming into the herds of Southern New England are of a quality to maintain or improve our present standards and whether or not cooperative organization is providing or can provide a suitable quality of replacement economically.

THE COOPERATIVE METHOD FOR PROVIDING DAIRY REPLACEMENTS IN SOUTHERN NEW ENGLAND.

The replacement of worn-out or unprofitable dairy cows has become a major problem to the dairy farmers of Massachusetts as well as the other southern New England states of Connecticut and Rhode Island which have very similar economic conditions. Nearness to large market centers with resultant high valuations on land and buildings have greatly increased the overhead cost in the use of these items for the purpose of growing dairy heifers.

To avoid these high costs, many dairymen, and particularly those nearest to the large market centers, have adopted the practice of purchasing all or a major portion of their replacements which have been raised on lower priced land, with consequent reduced pasturage costs, and where overhead costs for buildings and labor were materially lower.

Table I shows the relative number of dairymen in Massachusetts included in a later study in this report, who have adopted this practice. Although the number of herds is not sufficiently large to be conclusive of the percentages following each practice, it does show that the practice of purchases is much more prevalent in the eastern part of the state than in the western part.

TABLE I

Methods of Providing Replacements in Eastern and Western Massachusetts. - D. H. I. A.

County		No. of herds raising replacements	No. of herds purchasing all or part of replacements (10% or more purchased)
Hampshire (East & West)	(W)	10	7
Worcester	(C)	2	1 - too few to represent county
No. Berkshire	(W)	7	5
Franklin	(W)	6	2
Bristol - Plymouth	(E)	5	4
Middlesex	(E)	10	10
		40	29

	Raised	Purchased
W - western part of state -	23	14
C - Central " " "	only 3 herds	
E - Eastern " " "	15	14

Herds included are only those for which records were available for a five year period and which were used in further studies covered by later tables.

The practice of purchasing replacements can prove truly economical only provided a suitable quality of disease-free stock can be purchased. The importance of the answer to the question of whether or not such stock is available is clearly evidenced by the steadily increasing number of imports of dairy cattle into the three southern New England states. The number of dairy cows imported by each are shown in tables II & III compiled from figures furnished by the divisions of animal industry of the respective Departments of Agriculture.

It is realized that part of the increase is due to the tuberculosis eradication program in effect in each of these states. This influence, however, does not in any way lessen the importance of the replacement problem.

In an attempt to at least find a partial answer to the question of quality in purchased replacements as compared to those raised here at home, a study on a production basis of comparison was made of those herds in several Massachusetts dairy herd improvement associations, in representative parts of the state, whose records were available over a five year period. The method of providing replacements practiced by each was secured from the County Agricultural Agent in the county where each was located.

Although a similar comparison on a disease-prevalence basis of comparison was not made, nor was such available, a study on such a basis was made by Prof. A. E. Merrill, Extension Dairyman of Connecticut, among the herds of that state. The results of his study are so decisive that they are given here because it is believed that conditions as a whole in the dairy industry of that state are sufficiently similar to those in Massachusetts and

TABLE II (a)

Sources of Imports of Dairy Cattle into Massachusetts.

	1928	1929	1930	1931	1932	1933	1934	1935
Maine	8733	8409	6915	6574	6563	6838	7474	6341
Vermont	7108	7917	6449	5483	6298	6937	7890	7721
N. Hamp.	4847	4457	3535	3778	4825	5820	7062	5995
Canada	970	1265	311	588	995	1232	1344	2399
Ohio	4	131	1202	2235	2632	2727	2790	2150
Penn.	14	11	21	147	425	693	1017	1218
Wisconsin	602	1119	958	1869	2647	2167	1827	698
Conn.	443	766	522	731	1211	1587	1578	1606
N. York	1366	1593	2114	2457	1627	1048	504	585
R.I.	217	191	192	360	371	540	591	549
All other	420	637	382	361	549	1022	1208	545
Totals	24714	26496	22601	24363	27943	30611	33285	31807

Data furnished by Mass. Dept. of Agriculture.

TABLE II (b)

Turnover and Replacement in Massachusetts Dairy Herds.

Data from Farm Economic Facts of June 1936
(Vol. IX, No.6 - Dept. Agri. Econ., M.S.C.)

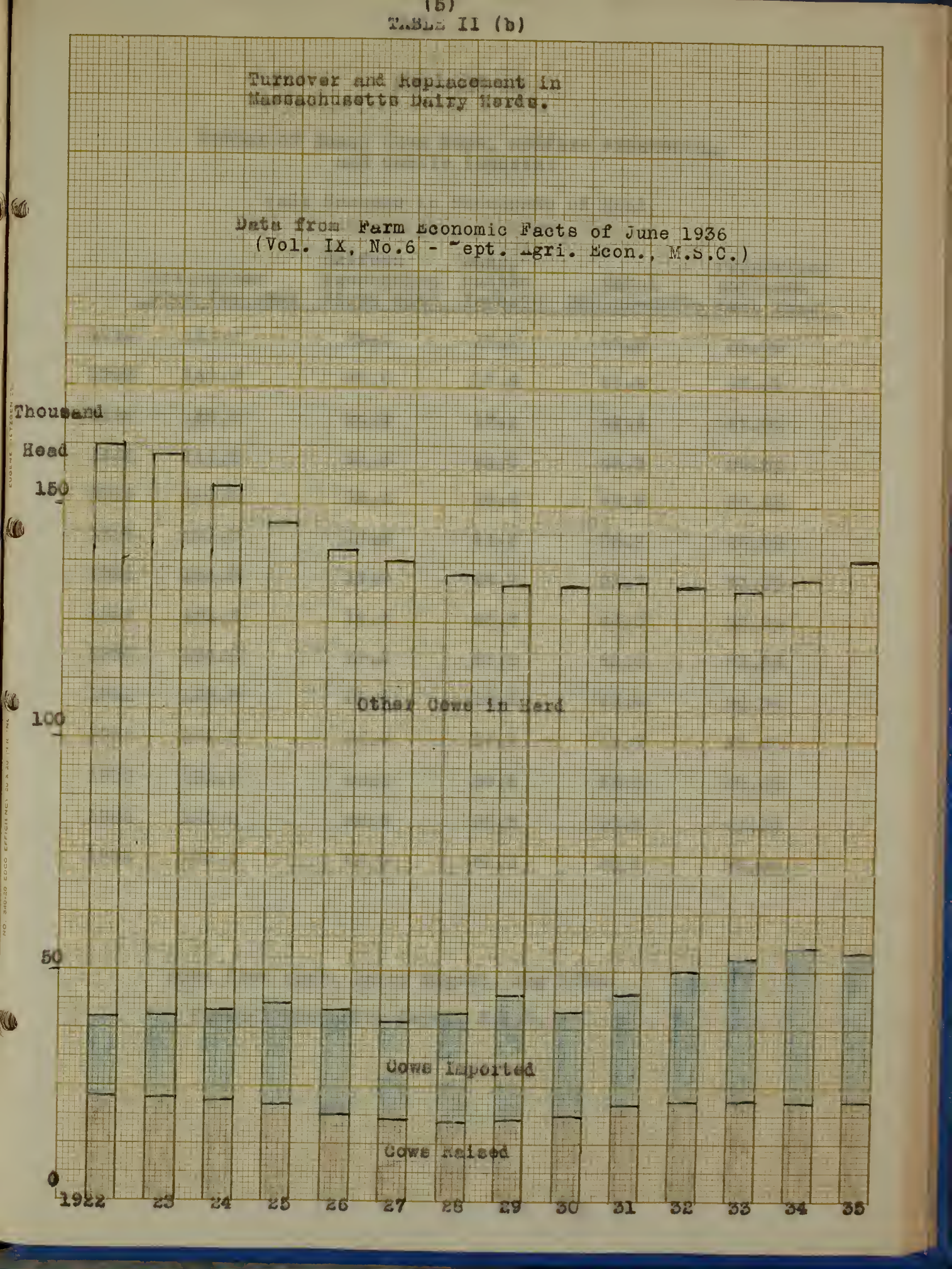


TABLE II (c)

Number of Dairy Cows Kept, Heifers Freshening, and Cattle Imports.

(All Numbers in Thousands of Head)

	Ave. Number cows for year	Heifers Freshening First Time	Dairy Cattle Imports	Total Replacements	Proportion Replaced Each Year
1922	162.0	23.0	17.3	40.3	25.0%
1923	160.5	23.0	17.4	40.4	25.0%
1924	153.0	24.5	17.1	41.6	27.0%
1925	145.5	21.5	21.8	43.3	30.0%
1926	140.0	18.5	24.4	42.9	30.5%
1927	137.0	17.5	21.2	38.7	28.0%
1928	134.0	17.0	24.7	41.7	31.0%
1929	132.5	17.5	26.5	44.0	33.0%
1930	132.5	19.0	22.6	41.6	31.5%
1931	133.5	21.0	24.4	45.4	34.0%
1932	132.5	22.0	27.9	49.9	37.5%
1933	132.0	22.0	30.6	52.6	40.0%
1934	135.5	22.0	33.3	55.3	41.0%
1935	138.5	22.0	31.8	53.8	39.0%

Data from Mass. Dairy Digest, May 1936.

(Animal Husbandry Dept., M.S.C.)

TABLE III

Cattle Imported Into Connecticut for Dairy and Breeding.

All figures for year ending June 30 of each year given.

	1931	1932	1933	1934	1935
Canada	142	254	86	17	303
Indiana	2	43	129	278	419
Maine	598	517	299	694	1165
Mass.	453	474	723	1212	1484
Michigan	81	137	119	37	481
New Hamp.	220	173	178	410	1119
New York	1911	1633	879	333	641
Ohio	2144	2322	2256	2372	2894
Penn.	815	635	629	594	931
R.I.	40	77	165	187	253
Tenn.	238	688	651	580	375
Vermont	1842	2054	2626	4309	5580
Wisconsin	1007	1280	1050	795	1510
All other	117	272	112	106	274
Total	9610	10559	9902	11924	17429

Cattle Imports into Rhode Island.

	1931	1932	1933	1934	1935
All sources:	3957	5606	5736	6226	8142

Data as to quantities from each source not available.

Figures compiled from data furnished by the Dept.of Agriculture of each state.

Rhode Island to be safely applied in a general way to them.

A survey of 763 farms in 1934 where all replacements were purchased gave the following results:

Of 11,689 cows kept, 4472 were sold during the year. This rate gives a complete turn-over every 2.6 years.

43.8% of the animals sold had abortion, mastitis, or breeding troubles.

34.5% were sold because they were low producers.

13.5% (only) of cows sold brought good prices as milkers.

8.2% were sold for other causes.

Proportion of replacements raised or purchased made little difference in the prevalence of disease troubles.

In sharp contrast with this picture is the comparative figures for 100 herds where all the cows were raised and no females were purchased. Of 1668 cows kept, 415 were sold during the year. This rate gives a complete turn-over every 4.0 years.

11.1% were sold because of abortion, mastitis, or breeding troubles.

19.5% were sold because they were low producers.

65.3% were sold as good milkers (at good prices)

4.1% were sold for other causes.

A summary of the reports of testers in Dairy Herd Improvement Associations of the state of Connecticut during the first half of 1935 show even more aggravated conditions.

These herds had 5,660 cows and sold 1075 (during six months), including herds where replacements were purchased and those where they were raised.

Of these:

21.0% were sold as low producers

18.7% (only) were sold as good producers.

48.0% were sold because of abortion, mastitis, or breeding troubles.

12.3% were sold for other causes.

If the same rate of removal continued for the full year, in the same proportions, it would mean that 30.9% of the entire herd yearly would be sold at canner, or very low prices. Now let us turn to the results of the study on a production basis among the Massachusetts herds. A brief explanation of the procedure followed in this study may aid in interpreting the results obtained.

First, the annual summary sheets of seven dairy herd improvement associations for the fiscal years 1929-30 and 1934-35 were compared to select those herds whose records were available in both years. As the records for 1929-30 and 1930-31 were not available in 20 Middlesex County herds, it was thought advisable to make the comparison on these herds on a three year basis from 1931-32 to 1934-35 rather than to omit them. To omit them would have left a preponderance of herds in the western part of the state where Table I shows that the practice of purchasing replacements is not so prevalent. The records of all herds used are given in Table IV

TABLE IV

Comparison of Herd Production Averages Five Year Period.

Quaboag Association (Worcester Co.)

Herd No.	1929-30 No.of cows	Cow years	Herd Average Pounds of 4% milk	1934-35 No.of cows	Cow years	Herd Average Pounds of 4% milk
1	40	27.75	10,211	36	25.33	10,667
2	49	43.58	12,852	65	60.83	11,519
3	25	21.58	6,175	24	22.50	7,402
			Bristol - Plymouth Assoc.			
4	34	28.50	5,776	38	37.42	5,377
5	5	5.00	7,806	5	4.67	9,685
6	32	25.42	9,573	43	41.67	9,399
7	37	34.17	6,508	40	37.08	6,866
8	12	10.58	7,221	13	12.00	6,594
9	19	16.17	8,027	17	15.58	10,567
10	76	56.58	8,128	38	36.33	8,352
11	30	28.92	10,974	21	19.50	12,245
12	22	19.33	6,015	17	16.50	6,892
			Hampshire Co. - East Assoc.			
13	17	14.33	6,303	19	17.50	5,946
14	45	40.25	6.490	36	26.75	5,876
15	16	14.67	10,733	20	18.08	9,020
16	34	30.92	6,070	47	40.83	8,873
17	46	37.83	7,050	38	32.25	7,538
18	42	34.00	8,014	53	44.42	6,855
19	8	6.25	8,005	15	9.75	6,009

Table No. IV cont.

Herd No.	No.of cows	Cow years	Pounds of 4% milk	No.of cows	Cow years	Pounds of 4% milk
20	12	8.92	9,232	16	5.75	11,491
			Hampshire Co. - west Assoc.			
21	20	18.92	8,230	21	17.17	7,149
22	21	16.58	10,467	26	20.83	10,337
23	13	10.92	7,026	14	11.83	6,398
24	14	10.33	7,201	28	18.50	7,788
25	26	25.17	6,046	27	19.75	4,637
26	24	22.58	8,342	24	17.75	9,148
27	17	13.08	6,540	19	14.42	5,937
28	12	9.25	5,874	23	19.58	4,233
29	28	20.83	5,986	28	21.83	6,081
			Franklin County Assoc.			
30	5	5.00	7,428	19	15.67	6,709
31	7	6.83	10,191	8	7.25	8,479
32	10	9.75	9,806	19	15.50	8,224
33	23	22.50	8,567	22	20.33	7,941
34	12	11.75	6,786	20	18.58	5,207
35	12	11.50	7,367	13	11.00	5,882
36	13	13.00	7,284	25	21.17	6,851
37	16	12.83	8,782	40	26.08	7,494
			Northern Berkshire Assoc.			
38	27	16.33	8,353		25.25	5,544
39	33	28.83	9,394		33.83	8,580
40	12	6.67	7,732		14.83	7,295

Table No. IVcont.

No. Herd	No. of cows	Cow years	Pounds of 4% milk	No.of cows	Cow years	Pounds of 4% milk
			Northern Berkshire Assoc.			
41	32	25.17	13,403		29.25	10,646
42	46	39.25	5,725		55.83	5,996
43	21	18.58	4,632		20.83	4,936
44	47	40.83	6,629		42.17	5,796
45	35	27.67	7,353		33.92	4,878
46	18	9.92	5,821		19.92	9,661
47	14	10.17	6,214		17.83	9,325
48	40	31.08	7,115		33.75	6,500
49	42	29.08	8,041		30.42	7,538
			Middlesex Assoc.			
	1931-32*					
50	26	12.33	7,978	49	26.42	8,359
51	43	34.08	8,836	56	40.92	8,884
52	42	35.42	7,858	40	34.92	9,262
53	23	16.17	6,736	28	16.17	7,494
54	23	16.92	9,052	17	11.75	10,973
55	35	27.58	11,031	45	33.75	8,884
56	18	16.33	6,185	24	10.83	6,612
57	41	29.17	7,799	41	34.50	7,628
58	29	20.83	7,047	17	13.67	6,964
59	164	115.75	7,468	52	41.92	6,828
60	78	53.33	8,423	58	50.25	8,093
61	37	27.58	9,356	28	26.08	9,993
62	73	60.33	6,193	62	49.42	6,713
63	8	8.00	5,872	7	6.83	6,266

Table No. LV cont.

No. Herd	No.of cows	Cow years	Pounds of 4% milk	No.of cows	Cow years	Pounds of 4% milk
64	27	19.33	6,671	33	21.67	6,796
65	11	9.42	8,490	22	18.33	7,539
66	120	109.42	12,123	151	121.67	12,398
67	34	26.83	8,572	33	29.08	8,238
68	25	20.83	6,599	36	21.58	7,171
69	5	5	7,858	6	5.92	7,021

*Records of 1929-30 and 1930-31 not available.

Total number of animals 2103 (in 1930)

No. of herds 69

All data taken from annual summary sheets of the respective associations on file in the Animal Husbandry Dept., A.S.C.

Next the herds were divided into groups of those where ten percent or more of the replacements were purchased and those where all were raised or less than ten percent were purchased based on information given by the county agricultural agents of the respective counties. Each of these groups was subdivided into those which showed an increase in production and those which showed a decrease in production over the period. This grouping is given in Table V.

Included in Table V is the total cost of grain fed per cow in each year so a rough comparison of feeding levels for those years might be made in an attempt to determine to what extent any production differences might be attributed to this cause. Comparison was made on a percentage basis in which the relative feed cost per cow was compared to the relative price of a standard feed (Eastern States Fulpail - 20) in the respective years.

Also included in Table V is the increase or decrease in average production per cow for each herd during this period.

The algebraic sum of the deviations was used to derive an average deviation and the average increase or decrease is computed.

TABLE V (a)

PURCHASED 10% OR MORE OF REPLACEMENTS.

Increased Production over 5 year period

Herd No.	1930 Cost of grain per cow	1935 Cost of grain per cow	1935 %of 1930 cost	*Deviation from comparative price av. of 81% ₣ plus	minus	Increase in av. production (lbs.)
1	$77	$55	71	-	10	456
7	61	39	64	-	17	358
12	67	51	76	-	5	877
16	48	41	85	4	-	2803
20	66	60	91	10	-	2259
24	60	35	58	-	23	587
	1931-1932		(% of 1932)	(from av.of 131%)		
50	$49	56	114	-	17	381
51	45	61	135	4	-	48
52	39	50	131	-	-	1424
53	31	44	142	11	-	758
54	48	86	180	49	-	1921
56	36	51	142	11	-	427
62	33	39	118	-	13	520
				plus 75 minus 85		13 12819
				net:-10		986 lbs.
				-10÷13=-0.7% av.		av.increase

*Derived by finding what percent of the average price of Eastern States Fulpail - 20 for the year July 1, 1929 - June 30, 1930 was the average price for the year July 1,1934- June 30, 1935 (41.27) 80.7%. See Table VI (51.12)

₣Herds 50-69 increase are compared to 1931-32 costs as being 61.6% of 1929-30 or 1935 prices averaged 131% of 1931-32 level.

TABLE V (b)

PURCHASED 10% OR MORE OF REPLACEMENTS.

Decreased Production over 5 year Period

Herd No.	1930 Cost of grain per cow	1935 Cost of grain per cow	1935 % of 1930 cost	*Deviation from comparative price av. of 81% # plus	minus	Decrease in average production (lbs.)
6	$100	$52	52	-	29	274
8	76	58	76	-	5	627
14	36	14	40	-	41	614
19	66	34	51	-	30	1996
23	51	24	47	-	34	628
27	66	25	38	-	43	605
30	66	55	83	2	-	719
37	75	46	61	-	20	1288
38	83	31	37	-	44	2809
39	84	63	75	-	6	814
40	78	59	76	-	5	457
45	60	34	57	-	24	2475
49	67	51	77	-	4	503
	1931-32		(% of 1932)	(from av. of 131%)		
58	$34	41	121	-	10	83
59	31	42	135	4	-	640
65	45	35	78	-	53	951
				plus 6	minus 348	15,461 ÷ 16 = 966 lbs. decrease

net = -342

-342 ÷ 16 = (-21.4% av.)

*See Table VI

TABLE V (c)

RAISED ALL REPLACEMENTS

Increased Production over 5 year Period

Herd No.	1930 cost of grain per cow	1935 Cost of grain per cow	1935 % of 1930 cost	*Deviation from comparative price av. of 81% plus	*Deviation from comparative price av. of 81% minus	Increase in average production (lbs.)
3	$55	$22	40	-	41	1227
5	82	52	63	-	18	1879
9	64	53	81	0	0	2540
10	94	52	55	-	26	224
11	78	58	74	-	7	1271
17	73	39	53	-	28	488
26	61	37	61	-	20	806
29	53	25	47	-	34	95
42	64	43	68	-	13	271
43	22	10	45	-	36	304
44	104	46	44	-	37	833
46	34	51	150	69	-	3840
47	70	58	83	2	-	3111
	1931-32		(% of 1932)	(from av. of 131%)		
61	$41	53	129	-	2	637
63	42	52	124	-	7	394
64	33	40	121	-	10	125
66	40	57	142	11	-	275
68	24	39	163	32	-	572
				plus 114	minus 279	18 | 18892
					net = -165	1049 av. increase
				-165 ÷ 18 = -9.2% av.		

*See Table VI

TABLE V (d)

RAISED AND REPLACEMENTS

Decreased Production over 5 year period

Herd No.	1930 cost of grain per cow	1935 Cost of grain per cow	1935 % of 1930 cost	*Deviation from comparative price av. of 81% # plus	*Deviation from comparative price av. of 81% # minus	Decrease in average production (lbs.)
2	$76	$42	55	-	26	1533
4	63	48	76	-	5	399
13	34	30	88	7	-	357
15	68	37	55	-	26	1713
18	62	26	50	-	31	1159
21	77	44	57	-	24	1081
22	90	53	5 59	-	22	137
25	70	26	37	-	44	1409
28	36	13	36	-	45	1641
31	59	46	78	-	3	1712
32	58	46	79	-	2	1582
33	83	49	59	-	22	626
34	84	44	52	-	29	1579
35	69	36	52	-	29	1485
36	93	46	49	-	32	453
41	109	61	56	-	25	2757
48	57	45	79	-	2	615
	1931-32		(% of 1932)	(from av. of 131%)		
55	$35	40	114	-	17	2347
57	40	41	102	-	29	171
60	37	47	124	-	7	330
67	45	47	104	-	27	334
69	36	40	111	-	20	837
				plus 7	minus 467	22 | 24257
			net = -460			1102 av.
			-460 ÷ 22 = -21% av.			decrease

*See Table VI

TABLE VI

Prices on which Feeding Levels were Compared.

EASTERN STATES FARMERS' EXCHANGE

Fulpail - 20%

	1929-1930	1931-1932	1934 - 1935
July	52.15	35.70	35.50
Aug.	53.50	34.05	39.73
Sept.	54.05	32.55	40.60
Oct.	53.90	31.35	40.00
Nov.	52.15	32.90	41.76
Dec.	51.90	31.60	44.80
Jan.	51.55	30.75	44.52
Feb.	50.05	30.30	43.75
Mar.	48.65	30.08	41.70
Apr.	48.95	30.40	41.70
May	48.90	29.90	41.56
June	47.70	28.45	39.60
Yearly Average	51.12	31.50	41.27
		61.6% of 1929-1930 av.	80.7% of 1929-30av. or 131% of 1931-32 av.

Data furnished by Department of Agricultural Economics, M.S.C.

In comparing increases or decreases in production averages with feeding levels, we find that in the purchase group which showed an increased production, 13 herds averaged 986 lbs. increase with 0.7% decrease in feeding level, or for practical purposes on the same feeding level. Those which showed a decrease averaged 966 lbs. less per cow on a feeding level reduced 21.4% or for practical purposes one-fifth lower.

In the group which raised their replacements and showed an increase 18 herds increased production an average of 1049 lbs. per cow on a feeding level reduced 9.2%, or almost a tenth. Those which showed a decrease averaged 1102 lbs. less per cow in 22 herds on a feeding level reduced 21%, or approximately one-fifth.

From this it is seen that although neither group increased their average production appreciably over the other, the group which raised their replacements did increase their production efficiency, approximately 10%, as measured by grain consumption. On the other hand both groups had approximately the same decrease at about the same reduction of feeding level.

These results show that improved production can be obtained by either method of providing replacements with only a slight advantage accruing to the method of raising. More outstanding, however, is the fact that a larger number of herds in each group showed a decrease in average production during the five year period than showed an increase. Will the present methods of the D. H. I. Associations really serve to improve our dairy herds? This is a really serious question. In fact, in Massachusetts the state average of these associations was 7897 lbs. of 4% milk in 1927-28. In 1934-35 it was only 7942 an increase of only 45 lbs. in seven years. It might be claimed that the economic depression

was the cause of this, but inspection of Table VII will show that in 1930-31 to 1932-33 (3 years) the average was 100 to 145 lbs. above that for 1935.

The following data taken from the "Annual Report of D.H.I. Associations in Vermont" for the year ending July 1, 1930, prepared by E. H. Loveland, Extension Dairyman, shows that a similar condition exists in Vermont.

Comparison by 5 yr. periods:

Years	No.of Assoc.	No.Herds	Av. production per cow on 4% milk equivalent
1910-14	14	285	5520
1915-19	81	1750	5442
1920-24	76	1609	5714
1925-29	78	1597	6470
1929-30	20	481	6450

In 1934-35 the state average was 6547, an increase in production of 1000 lbs. per cow for 25 years of work! Further, that 1000 lbs. increase came in the ten year period 1920-1930. The relatively slight variation evidenced in the average productions for all states from which Massachusetts imports appreciable numbers of dairy cattle, as shown in Table VII, would tend to indicate that the condition is general.

TABLE VII

State Average Productions Per Cow - D.H.I.A.

in states from which appreciable quantities of dairy cattle are imported into Massachusetts.

Year	Mass.	Vermont	N.H.	Ohio	Penn.	Wisc.	Conn.	N.Y.	Maine
29-30	7709	6450	6911	7860	7882			7629	
30-31	8069	6604	7199	7552	7924	7832		7648	
31-32	8087	6562	7398	7621	7976	7762		7625	
32-33	8054	6664	7606	7783	8143	7903		7620	
33-34	7942	6768	7345	7982	8089	7910		7836	
34-35	7942	6547	7491	7989	8329	7477*	7298	7874	
35-36	8057	6660	~~7676~~ 7759	7776	8333	7802	~~4288~~ 7261	8092	6824

*Lower average due to draught feed conditions during part of 1934.

All figures given in pounds of 4% milk (Conversion method used:- lbs. milk x 0.4 plus lbs. fat x 15)

Figures for Maine not available.

Data furnished by respective Colleges of Agriculture in each state.

Another point which is shown by Table VII is that Pennsylvania is the only state with an average appreciably higher than Massachusetts and that by only about 400 lbs.

Thus it will be seen that our present sources of supply will not improve the quality of our dairy herds without critical selection of animals offered. It is also questionable whether methods of selection now employed for other than purebred animals on test are adequate to insure that stock secured is of the quality desired before being imported.

The study made by Prof. Merrill, previously quoted, clearly points to the advantage of raising one's own replacements to insure freedom from disease. The study of production just given also points to a small advantage in raising one's own replacements but it also shows that a breeding program may progress backwards as well as forward. To insure improved production a program requires a system of record keeping, using proven and indexed sires, and a knowledge of genetics which are not common among dairyment thruout this section. The amount of education necessary to impart this genetic training is tremendous.

The present solution would seem to be the establishment of supervisory agencies with properly trained personnel in conjunction with existing organizations or as new organizations formed expressly for that purpose. They might take the form of purchasing departments in cooperative purchasing organizations, such as the Farm Bureau, Eastern States Farmers Exchange, Grange League Federation, or possibly on a smaller scale with individual Dairy Herd Improvement Associations.

The latter type might better take the form of supervising a

breeding program among its members thru location and selection of suitable sires based on the quality of the herds involved as evidenced by the herd records obtained by the association. It is doubtful if the number of cattle such a group would be purchasing would enable them to keep an effective and up-to-date system of records showing stock available, to verify records of production back of the breeding, and to keep the overhead necessary in this method of selection, plus the cost of inspection of animals considered, to a reasonable figure per animal purchased. A large organization, dealing in greater numbers of animals, should be able to keep this overhead within a reasonable figure per animal. Particularly would this be true of a purchasing organization which already had a field organization for other lines in the districts covering the sources of supply, as well as in the distributing districts.

The smaller organizations might also consider the cooperative raising of the young stock of its members. Such a plan would retain many of the advantages brought out with regard to freedom from disease and aid in making effective the program for the use of proven sires.

In either of these two methods, the cooperative form of organization and method of operation should be able to provide the most satisfactory way to secure reliable information from which selection of suitable animals for replacement purposes might be made. Under this form of organization, the complete control of the securing and verification of data would be in the hands of the purchaser or his agents rather than in the hands of the seller who might present only such evidence as would be in his favor. It is not possible to obtain any real progress in herd improvement

without accurate information, whether breeding or purchasing one's stock.

An attempt was made to locate cooperative organizations formed for the purpose of either purchasing or raising replacements. The results were extremely meager. In fact, extensive correspondence revealed only one such organization of each type, and that for raising is only very loosely organized.

Two organizations were located which were seriously considering the cooperative buying and selling of dairy cattle. Neither has expectations, however, of so operating in the immediate future. One of these organizations is the Grange League Federation of New York and the other is the Capital District Market at Menands, N.Y. Both of these would be jointly controlled by both buyer and seller, with their present membership, should they undertake such a project.

The Syracuse Livestock Market, also in New York, is being developed to handle three classes of livestock; cull or slaughter animals, dairy replacements, and purebred cattle. Each is to be handled in a separate section of the market. Control of the market rests in the hands of a market authority, a quasi-governmental organization, but it will not be truly cooperatively managed.

A number of instances of what appeared to be cooperative enterprises among 4-H Club members for purchasing dairy and beef calves and pigs proved upon closer examination to be merely the assembling of information regarding animals available. In each case the youngster, or his parent, inspected the animals in which he was interested and made the purchase agreement direct with the owner. No cases were located where a representative

or representatives were authorized to purchase for a group.

The only truly cooperative purchasing organization for dairy cattle that was located was the New Jersey Farmers' Cooperative Association, which operated about 1934. It was a state-wide organization sponsored by the New Jersey Farm Bureau. Correspondence with the state secretary of the Farm Bureau, Mr. H. E. Thayer, revealed that the association was formed by five or six county boards of agriculture, which subscribed for stock, and several individuals loaned money for further capital.

The cattle handled were purchased in Wisconsin, shipped to New Jersey, and sold at auction. To quote Mr. Taylor: "This organization did very well for the first sale or two, but then our buyer fell down on the job and brought us back a bum lot (four cars) of cattle, upon which we lost a large amount of money and reputation, and since that time we have not functioned. However, we have never lost faith in the plan and with the right amount of cooperation and a good buyer, large amounts of money can be saved to our producers."

In an earlier letter, Mr. Taylor, stating it another way, said: "If we could be assured of high grade cows, we could have gotten a good price and this organization would be going to-day and making money for the counties which have stock in it."

To give a better picture of the organization and policies of this association, excerpts from its constitution and by-laws are quoted here:

Article I: Section 5

> "Each member present at any regular or special meeting of the association shall be entitled to one vote, irrespective of the number of shares of stock held. No votes by

proxy shall be received at any annual or special meeting.

Article II: Section 1

"Any person owning or operating a farm from which he derives the principal part of his income or any agricultural association organized principally for the benefit of the farmer in New Jersey shall be eligible for membership upon election by two-thirds vote of the Board of Directors and shall become a member by agreeing to abide by the By-laws and purchasing not less than one share of stock in the association. Partnerships or corporations so owning and operating farms shall be eligible for membership as aforesaid.

Article III: Section 2

"At least two members of the Board of Directors shall be members of the Executive Committee of the New Jersey Federation of County Boards of Agriculture.

Section 4

"The Board of Directors shall have power to employ a competent manager and to determine his compensation.

Article V: Section 1

"The capital stock of this association shall be $25,000.00 which shall be divided into 250 shares at a par value of $100.00 each. The Board of Directors shall authorize the issuance of any part of the capital stock as may be deemed necessary from time to time for the proper transaction of the business of the association.

Section 6

"The sale of all stock issued shall be restricted as follows: any stockholder desiring to sell his stock shall first offer to sell it to the Board of Directors at the book value of such stock. Such offers shall be made in writing. The Board of Directors shall have ten days in which to either accept or reject such offer and should the Board fail to accept the offer to take the stock at the book value, there and then the holder of such stock may sell it to any other person. The book value shall be such as is fixed at the last yearly audit. No stock can be offered to or held by any person not eligible for membership in this association.

Article VI: Section 1

"The Board of Directors shall have power to give discounts in the purchase of supplies or live-stock through the association to such individuals as are bona fide members of county boards of agriculture having capital stock in this association.

Article VII: Section 3

"Should there be any net earnings in excess of the amount

set aside by the Board of Directors then there shall be paid to the members out of the earnings of the association as soon after the end of the fiscal year as possible an interest dividend not to exceed 8% of the par value of the stock held by the members at the end of the fiscal year. The whole balance remaining after payment of the said interest dividend shall be divided among those persons, stockholders and non-stockholders, doing business with the association during the fiscal year in the proportion of the business done by such person to the whole volume of the business done by the association during the said fiscal year. However, should any member or non-member be indebted to the association then the amount of such debt shall first be deducted from such member or non-member's share of such surplus."

Mr. Taylor has certainly touched the keynotes for the success of such an organization, "The right amount of cooperation and a good buyer." To this should be added a method of securing reliable information upon which the buyer could intelligently make selections of cattle offered on a quality (particularly production) basis.

To assure "the right amount of cooperation," the association formed would have been improved by having absolute equality among all members. Article III, Section 2, requires that two members of the Board of Directors shall be members of the Executive Committee of the New Jersey Federation of County Boards of Agriculture." Such a requirement gives it a complexion of paternalism on the part of the government. The fact that these boards subscribed to most of the capital stock issued may have justified the restriction, but it weakened the cooperation and support on the part of its patrons. It would undoubtedly have been slower in completing its organization if the stock had been subscribed by patron members, but it would have assured greater interest in its methods of operation and loyalty to it to insure its success. The first error in purchasing policy would not have been so apt to have caused its complete failure.

Another feature which must have weakened the loyalty of its support was the lack of impartiality of conditions under which purchasers could secure live-stock. This policy is covered in Article VI, Section 1, in which discounts are permitted to members of county boards of agriculture having capital stock in the association. Certainly all members should be treated alike if confidence in the association is hoped for.

The methods which might be employed to secure information upon which to base selection of animals will be covered later when discussing a proposed plan of organization for a cooperative purchasing association. Before doing so, mention of methods used by several of the breed organizations in conducting cooperative sales might prove helpful.

Cooperative sales of each of the four major dairy breeds have been held by local groups such as state breed associations, sectional associations comprising several counties, and in some cases even single county sales. In most cases these sales are sponsored by an existing association. Information secured by personal correspondence show that some pro rate the expenses based on the number of head. Others charged a commission which averaged about 10% to 11% of the sale price. In the latter case any profit was considered a contribution to the treasury of the sponsoring association.

In practically every instance, animals consigned were offered at absolute auction with by-bidding strictly forbidden. All sales required certification of freedom from tuberculosis and many of the more recent sales also required freedom from Bang's disease.

One type of sale in particular, a promotion sale used by Guernsey breeders in the southern states gives a method which might prove admirable for use by a cooperative purchasing organization to solve the problem of selection by purchasing members and still only charge the actual overhead costs. The following is quoted from a letter from Mr. H. C. Bates, Field Representative of The American Guernsey Cattle Club, stationed in Atlanta, Georgia; "the heifer sales (and there have been only two) have been held by securing the interest of some well-to-do breeder in creating new breeders in his state. In each case so far, the plan followed has been to send the state dairy agent or one of his staff into some section heavily populated with Guernseys and have him select 25 to 40 good heifers ranging in age from 6 to 12 months old. These heifers are paid for by this breeder and are then auctioned off at public outcry for whatever they will bring. The understanding is, however, that no matter what the animal is knocked off at, he will be refunded all above her actual cost, plus added expense to date of sale. In one instance it was necessary to refund to each purchaser 40 percent of what each animal was actually struck off at. I recall that one purchaser was refunded $60.00 of his bid. This proved to be a very satisfactory method of creating new breeders and can be used in newly developing sections to a great advantage."

By simply substituting the purchasing association for the "well-to-do breeder" in this plan of procedure, a very effective way to solve the problem of the selection of animals by member purchasers is available. It has the further advantage of

lessening the risk of excessively low bidding keeping the proceeds from covering actual costs because the buyers would know that all profits would be promptly returned on a percentage basis.

In a few cases a sale was organized and controlled entirely by the breeders offering animals for sale. They differed but little from the types mentioned except that in these cases the costs were usually pro rated.

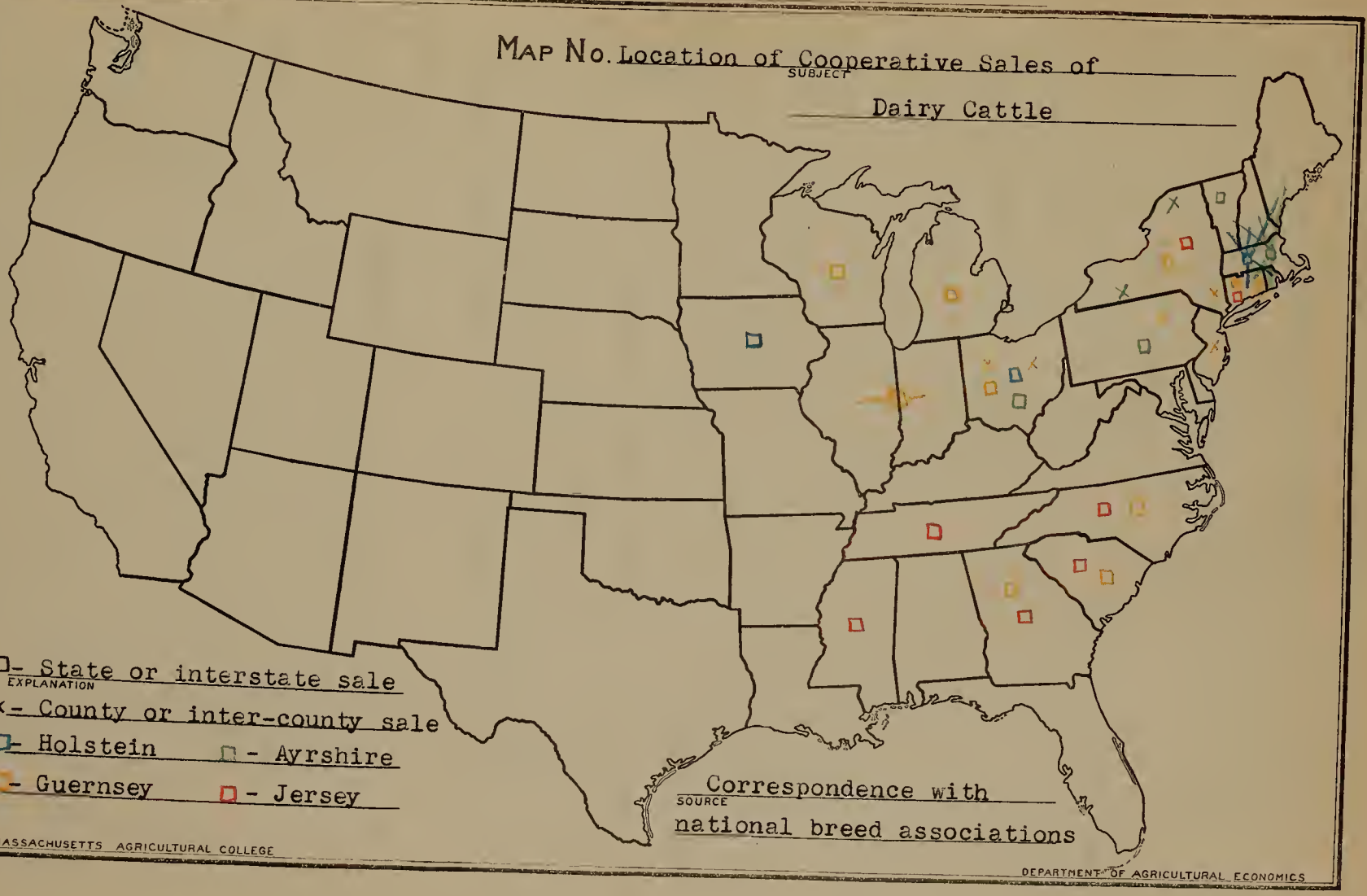
Distribution of sales located which were conducted more or less cooperatively as already outlined are shown on the map figure I.

From a study of this type of organization it would seem that if breeders find it profitable and economical to organize cooperative sales to sell their stock to advantage, it should certainly prove equally profitable for the purchasers to do like-wise, particularly where they cannot personally visit the breeder of the animals offered, because of distance or other reasons.

Whether such a purchasing organization were a department of an existing large scale cooperative purchasing association or an entirely separate venture would make little difference in its basic principles of operation.

First it should establish and maintain an information section as part of its purchasing department, for the locating of animals available and securing as much information regarding each as can possibly be obtained. This should include the physical characteristics of the animal such as breed, purebred or grade, age, size and weight, and freedom from disease or

STUDENT'S NAME



defects. Then the production qualities of the animal should be obtained as evidenced by production records, what type of record (advanced registry, D.H.I.A., or farm record), if first calf heifer the production record of dam and index of sire. Also price asked should be included.

From such information secured as a result of correspondence, advertisements, etc. The association could send its buyers to those sections where a sufficient number of the right quality animals appeared to be available. The buyer would also have at hand verified information upon which to base the selection of animals to be purchased, which he could not hope to do in the field, provided the animals proved physically desirable.

A similar work could be done by this information section in determining the quantities, kinds, and quality of animals desired by its member purchasers. Thus carlots assembled could be routed direct to the point which would best serve the members desiring that grade of stock. Such information would also be of considerable value to the purchasing agent in making his selections.

All the information available concerning each animal offered should be put in the hands of the person conducting the sales to members and made freely available to all prospective purchasers. Such a system should unquestionably bring a premium for the better quality of animals. If this premium is, at least in part, passed on to the breeder, it should make available to the association the best animals being offered in any of the surplus cattle producing areas. If such a premium is based on authentic records being obtainable, it should quickly increase the number

of such records available.

The auction method of sale would seem to be the only logical way to avoid disputes and claims of discrimination in assignment of animals. A fixed charge ample for overhead costs of each sale should be made. Any proceeds over and above actual costs, including overhead, should be returned, on a percentage of bid prices, to each buyer. Such a procedure would stimulate bidding and assure fair prices.

A cooperative purchasing organization operating under the principles and plan outlined would have several advantages if organized as part of an existing purchasing association. Chief among which would be large volume upon which to distribute overhead of the information sections mentioned; field contacts and representatives already established in both the supply districts and the distributing districts for the handling of their other commodities; and sufficient volume to practically always be able to accept animals of unquestionable value when offered, thus assuring a supply because breeders would not be diverted to other outlets at such times as a small organization would not have a demand for stock among its members.

A smaller organization's chief advantages would lie in the increased confidence among its members from their intimate contact with its organization and operation. It might well be formed as an additional activity of a dairy herd improvement association, or better still a group of them.

A dairy herd improvement association might find it more practical to raise their young stock cooperatively than to purchase dairy cows. They could concentrate their efforts on

an effective breeding program thru the use of indexed and proved sires selected, and possibly owned, by the association. Certainly the association could aid and supervise the exchange of such proved sires among its members.

An attempt was made to locate any existing organizations which might be practicing this plan but none were found. The nearest to it is a plan recently put into operation in Bristol County, Mass. A group of dairymen in that county associated themselves together for the purpose of drawing up a uniform plan and agreement for the contract raising of their heifer calves by dairymen in the low cost pasture areas such as Vermont and New Hampshire.

Under their plan a representative of the group contacts the individuals interested in raising this stock under contract and completes the arrangements. The actual contract is signed by the individual owning the stock and the individual who is to raise it. The chief points covered by this contract are the price per pound of gain, the minimum feeding standard, retention of breeding supervision by the owner thru selection of bull to whom serviced, and the settling of responsibility in case of loss, injury or disease.

The greatest weakness of this plan would seem to be that the distance is such that frequent inspection of animals under contract by the owner is not practical. It also lacks a definite breeding program. The owner may select the bull he wishes but the animals to be served are scattered and the selection is bound to be rather casual.

It is doubtful if this plan will be successful until they go the whole way and organize to raise the stock under their direct

supervision. It should be possible to secure a farm of sufficient size and low land valuation to make it economically sound to raise the stock jointly and near enough to maintain close contact with its operation by each member. This plan would only be practical where the value of the land to be used was sufficiently lower than that of the members to effect a material saving in pasture and housing costs. Thus it is a plan only for producers near to market centers with relatively high valuations as compared with the averages for their state.

A plan such as this offers a splendid opportunity for a breeding program based on production records and a full knowledge of the history of each individual animal. It should also retain most of the advantages, from a freedom from disease stand-point, that are inherent in the home-growing of young stock.

Its greatest weakness is the amount of faith and continued loyalty necessary on the part of its members to insure its success. It would be necessary for each member to subscribe considerable capital to establish the growing unit and to obligate himself to either pay the raising costs on a pound of gain basis at regular intervals or to purchase back the full grown heifer just before freshening.

In an attempt to determine with what size a unit and at what valuation such a cooperative raising association could economically operate, some computations were made based on the cost of raising heifers to two years of age. These cost were secured from unpublished data from the files of Mr. J. G. Archibald, Massachusetts Experiment Station. From his data the items in the total cost of raising heifers will be close to the following percentages:

A. Total Feed costs ---------- 70%

Purchased feeds - 34%

Home grown feeds- 36%

(hay, pasture, green feed, etc.)

B. Other expenses ---------- 30%

Labor - 17%

Interest on buildings - 3%

Interest on equipment -1.5%

Bedding ---------- 3.5%

General overhead ---- 5%

The smallest unit practicable would be that which one full-time man could handle with occassional day labor. Assuming, then, a minimum labor cost per year of $1000.00, the gross business would have to be approximately $6,000.00 per year if labor cost is taken as 17% of total cost of raising.

Based on present costs, the total cost of raising a heifer to freshing at from two years to twenty-eight months is from $100 to $125 per head, according to figures given by Prof. F.M.Branch, Dept. of Agricultural Economics, U.B.C.

Based on these two estimates, the minimum size of unit would be from 150 to 175 head of stock. To raise this number of head and produce all hay, green feed, whole milk and pasture, the farm would have to contain a minimum of 90 to 100 acres of pasture and 110 to 125 acres of hay and crop land. If such a farm could be secured fro from $8000 to $10,000 or less, equipped to cut and store all its hay and forage crops and house 175 or more head of stock of varying ages, it should be an

economically sound investment for such an association. Interest on investment should then be within the amount given under the itemized costs of raising.

There would seem to be little question that farms meeting these requirements and within this price limit are available within reasonable distances of those farmers on high priced land close to market centers. For the organization to succeed, the growing farm selected must be sufficiently near to permit each member to keep in actual contact with the raising of his stock.

Thus it would seem evident that the conditions controlling the operation of such a cooperative association are those depending on the continued genuine cooperation of its members rather than economic limitations. Such an organization certainly can not succeed without the loyalty and sincere support of each and every member. Given these and good management, the association should be a decided success both financially and in the improved quality of replacements obtained.

SUMMARY:

The increasing cost of raising dairy replacements, chiefly as a result of high valuations on land and buildings near large market centers, has caused many dairymen in Southern New England to adopt the practice of purchasing a major portion of their replacement stock. The increasing number of cattle imported for this purpose is evidenced by the records from the Departments of Agriculture in Massachusetts, Connecticut and Rhode Island, over a period of years, covering importations into their respective states.

Steadily increasing numbers of imports makes vitally important the question of whether or not the cattle being imported are of the proper quality to maintain the standards of our dairy herds.

A study on a freedom-from-disease basis, made by Prof. Merrill in Connecticut, shows clearly that those herds which raise all their replacements have a greatly reduced disease problem and a much lower depreciation on milking stock thru fewer sales of stock because of udder or breeding troubles.

A study made for this report on herds in Massachusetts, on a production basis over a five year period, showed little or no advantage to raising ones stock in increasing average herd production under present methods, but did show approximately ten percent increased efficiency based on a comparison of feeding levels.

This study also revealed that more herds in the Dairy Herd Improvement Associations of Massachusetts showed a decrease in average herd production than showed an increase from 1930 to

1935. Figures from a number of states, particularly those from which major quantities of cattle are imported into Southern New England, show that the average production for each state has been practically at a stand still for the past six years. In Vermont, for which figures over a long period were fortunately available, the results of twenty-five years of D.H.I.A. work has succeeded in raising the average production of the state only 1000 lbs. in twenty-five years, and that increase came in the ten years between 1920-30.

Another fact revealed by this comparison of figures from states shipping us large quantities of replacements, is that in none of them were the averages for the state materially better than that of Massachusetts, with the possible exception of Pennsylvania. Consequently importation without careful selection will not provide a suitable quality of replacement.

An attempt was made to determine whether cooperative organization is providing or can provide a satisfactory and economical method of selecting and securing a suitable quality of dairy replacement. Cooperation offers the only feasible plan for the securing and verification of the data necessary to make such a selection under the control of the purchaser.

An intensive search for existing organizations formed for either the cooperative purchase or the cooperative raising of dairy replacements revealed only one of each type and two organizations which are considering the plan of cooperative purchase. The purchasing organization located in New Jersey had only a short life and is now defunct, partially, at least, as the result of a violation of the principle of absolute equality and impartiality to all members in its organization as a

cooperative. The sponsors of the plan still feel that, properly organized, the plan offers possibilities of improved quality of stock at reduced cost.

A study of cooperative sales of livestock by breeders of dairy cattle showed a number of successful sales functioning regularly. Their methods should prove equally advantageous to purchasers of dairy cattle, particularly if supplemented with an efficient department of records and information for use in selection of animals purchased.

The organization located which was formed for the cooperative raising of dairy replacements, is too newly organized to accurately judge of its effectiveness. Consideration of a proposed plan of organization for the cooperative raising of its members' own stock showed that the project should prove effective and economical where a suitable farm can be secured, at a valuation for which the interest and farm-grown-feed costs can be kept within reasonable limits, and located sufficiently near to the members of the organization so that each could keep in close contact with its operation.

APPENDIX A.

Key to Herd Numbers Used in Tables.

Herd No.	Name of Owner
	(Quaboag Assoc.)
1	Hertil, Robt. & Sons
2	Rutland State Sanitorium
3	Violveg, Ernest.
	Bristol-Plymouth Association
4	Cowesett Farms
5	Davidson, W.J.
6	Horton, F. H. & Son
7	Hiller, Howard B.
8	Kriss, Albert H.
9	Kimball, Ivory W.
10	Mt. Hope Finishing Co.
11	Sattler, Fred C.
12	Standish, H. A.
	Hampshire Co. - East
13	Atkins, W. H.
14	Bagg, Q. A.
15	Cook, J.G.
16	Grise, A.
17	Timmins, G.H.
18	Thompson, Geo.
19	Titus, E. L.
20	Witt, H. H.

Appendix A. Cont.

Hampshire Co. - West

21 Howes, M. S. & Son

22 Loud, C. G.

23 McKinney, C. H.

24 Montague, E. A.

25 Norris, C.A.

26 Parsons, W.A.

27 Rice, R. J.

28 Streeter, Dr. A. H.

29 Turner, J. D.

Franklin County

30 Allen Charles

31 Dwight, Henry A.

32 Fuller, George

33 Graves, E.B.

34 Hall, Charles A.

35 Hall, Clarence E.

36 Hawes, H. G. & Son

37 Severance, Herman

Northern Berkshire

38 Butler Bros.

39 Cranston, J.B.

40 Culver, Andrew

41 Ellis, J.C.

42 Galusha, D. J.

43 Goodrich, B. Harold

44 Highlawn Farm

Appendix A. cont.

Northern Berkshire

45 Lowry, Geo.

46 Martin, Everett L.

47 Morse, Darwin

48 Sunset Farm

49 Westenhok Farm

50 Eastleigh Farms

51 Jones Fred H.

52 Middlesex Schools (Michael Ryan, Mgr.)

53 Murch, Warren G.

54 Penny, D.F. (Roads End Farm)

55 Reformatory for Women (Lee Currier, Mgr.)

56 Shell Crest Farm (James L. Wood, Owner)

57 Thompson Bros.

58 Upland Farm (Leslie Murray, Mgr.)

59 Verrill, Floyd

60 Waveney Farm (Jackson, Mgr.)

61 Whitcomb, H. H.

62 Ashly Stock Farm

63 Cutler, Miss

64 Fox, Everett B.

65 Hanson, D. C.

66 Mass. State Infirmary

67 Neponsett Valley Farm

68 Robinson, H. B.(Ballecribbin)

69 Starrow, Mrs. J. J.

Approved by

H. E. Lance

Grant Snyder

V. A. Riley

Graduate Committee

Date 6/12/37