VIRGINIA

DAIRYING ANNUAL REPORT 1938

NWP-11

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
STATE OF VIRGINIA

John R. Hutcheson, Director
V.P.I. Agricultural Extension Service
Blacksburg, Virginia

1938 ANNUAL REPORT OF EXTENSION DAIRYMEN

R. G. Connelly, Extension Dairy Husbandman
R. W. Dickson, Asst. Extension Dairy Husbandman
D. J. Young, Asst. Extension Dairy Husbandman
P. M. Reaves, (½ time) Asst. Extension Dairy Husbandman
C. L. Fleshman, Dairy Manufacturing Specialist

December 1, 1938 - November 30, 1938

THE ANNUAL STATISTICAL REPORT OF THE EXTENSION DAIRYMEN

V. P. I. EXTENSION SERVICE

December 1, 1937 - November 30, 1938

Total Activities of Dairy Extension Staff

1. Days in office (5 extension dairymen)				361
2. Days in field (5 extension dairymen)				867
3. Days on out-of-state trips				45
4. Days on annual leave				49½
5. Dairy meetings and conferences:				
a. No. with county agents	369	Attendance		3077
b. No. with home demonstration agents	6	"		57
c. No. with district agents	22	"		268
d. No. with U.S. Dairy Bureau Represents.	28	"		98
e. No. with other Agri. College "	62	"		327
f. No. with Breed Assn. Representatives -	56	"		613
g. No. with dairy plant managers	167	"		446
h. No. with other state officials	98	"		405
i. No. with D.H.I.A. members & testers	98	"		676
j. No. with coop. marketing agencies	5	"		38
k. No. with 4-H dairy clubs	68	"		711
l. No. with bull associations	24	"		180
m. No. with other state dairy organization	77	"		2568
n. No. subject matter meetings addressed	-101	"		3454
o. No. other meetings attended & addresse	140	"		38937
Total meetings & conferences	1528			42499
6. Field Activities				
a. No. county visits made				495
b. No. different counties visited				417
c. No. farm visits 642 No. specific recommendations made				451
d. No. dairy plant visits-124 " " " "				302
e. No. demonstrations & contests held - 69 Attendance				2538
f. No. dairy tours & field days participated in -15 Attend.				2660
7. Office Activities				
a. No. special dairy articles prepared for newspapers,magazines				45
b. No. "Virginia Extension Division News" articles				11
c. No. other special publicity articles				29
d. No. radio talks prepared				14
e. No. routine business letters				3038
f. No. circular letters sent out				14700
g. No. bulletins sent out				1555
h. No. office conferences				370

INDIVIDUAL ACTIVITIES OF EXTENSION DAIRYMEN
December 1, 1937 - November 30, 1938

	R.G.Connelly	R.W.Hickson	D.J.Young	P.H.Reaves	C.L.Fleshman
1. Days in office	125	188	78	51	171
2. Days in field	179	156	76	61	125
3. Days on out-of-state trips	16	5	11	5	6
4. Days on annual leave	5	17½	0	9	14
5. Dairy meetings and conferences:					
a. No. with county agents	146	78	58	24	61
b. No. with home demonstration agents	2	0	0	0	4
c. No. with district agents	13	2	6	0	1
d. No. with U.S.Dairy Bureau Representatives	19	3	1	5	0
e. No. with other Agri. College "	41	10	0	0	11
f. No. with Breed Association "	14	38	10	0	0
g. No. with dairy plant managers	18	1	0	0	188
h. No. with other state officials	26	10	0	0	56
i. No. with D.H.I.A. members & testers	17	79	1	1	0
j. No. with cooperative marketing agencies	1	0	0	0	4
k. No. with 4-H dairy clubs	19	0	34	2	0
l. No. with bull associations	16	4	0	2	0
m. No. with other state dairy organizations	22	2	2	1	50
N. No. subject matter meetings addressed	74	14	2	7	0
o. No. other meetings attended or addressed	64	14	22	0	25
	490	251	150	56	391
6. Field Activities:					
a. No. county visits made	168	97	61	24	118
b. No. different counties visited	137	81	50	43	106
c. No. farm visits	290	121	37	100	34
d. No. dairy plant visits	5	5	0	0	116
e. No. demonstrations and contests held	33	0	15	10	11
f. No. dairy tours & field days participated in	8	2	3	0	2
7. Office Activities:					
a. No. special dairy articles prepared for newspapers, magazines, etc.	24	2	1	9	8
b. No. "Virginia Extension Division News" articles	10	1	0	0	0
c. No. other special publicity articles	0	0	4	1	24
d. No. radio talks prepared	0	5	1	8	2
e. No. routine business letters	1000	1284	120	355	309
f. No. circular letters sent out	3222	10913	112	346	115
g. No. office conferences	100	99	19	82	52
h. No. bulletins sent out	125	1156	2	39	35

THE ANNUAL NARRATIVE REPORT

December 1, 1937 - November 30, 1938

Organization of Personnel

During the extension year D. J. Young, a graduate of Ohio State University in the course of Dairy Husbandry, was added to the staff in June to fill a vacancy created by the resignation of R. P. Keithly in November, 1937. The general responsibility for the organization, supervisor, and development of the Virginia dairy extension program rested with R. G. Connelly, Extension Dairy Husbandman. As in former years the dairy extension program was developed on a five project basis, with definite project assignments as follows:

Project No. 1 - Dairy Herd Records and Herd Management was directed by R. W. Dickson.

Project No. 2 - Dairy Cattle Breeding and Dairy Bull Registry was supervised by R. G. Connelly.

Project No. 3 - Cooperative Work with Virginia Dairy Organizations was supervised by R. G. Connelly, R. W. Dickson and P. M. Reaves.

Project No. 4 - 4-H Dairy Clubs was supervised jointly by R. G. Connelly and D. J. Young.

Project No. 5 - Dairy Manufacturing, Dairy Marketing, Quality Improvement, and Consumer Education, was supervised by C. L. Fleshman.

Although definite project responsibilities were assigned to each staff member, there was an exchange of assistance among the several projects as conditions required. P. M. Reaves worked closely with the Virginia Holstein-Friesian Club and assisted with the assembling of production records for proving bulls. His services were rendered on a one-fourth extension time basis. Three-fourths of his time was devoted to resident teaching in the College Dairy Husbandry Department.

Dairy Extension in Relation to General Agricultural Extension Resident Teaching and Research

Fettered with routine responsibilities in connection with the administration of County AAA, and other programs, most of the county agents had

little time for the promotion of the dairy extension program. It was therefore necessary to continue the development of the state dairy projects through dairy organizations, such as the Dairy Herd Improvement Associations, the Cooperative Bull Associations, the Virginia State Dairymen's Association, the Virginia Dairy Products Association, the three Virginia Dairy Breeds Associations, the several cooperative and private dairy processing and marketing organizations, the Virginia Dairy Councils, and the various other state agencies. This adjustment in the dairy extension procedure has served to relieve some county agents for other work without creating a general breakdown in the dairy extension program. It has also served to vitalize the work until such a time when the county agents are again able to assume their place in developing the dairy extension program in their counties. The sole purpose of this modification has been to protect the dairy extension program as well as the county agents position during a trying emergency.

The usual policy of close cooperation with the College and Experiment Station staffs maintained throughout the year. Through conferences ideas were exchanged with mutual benefit.

This inter-departmental relationship extended to the arranging of tours for students, teaching classes, conducting farmer and sow tester short courses, locating employment for students of the college, contacting boys to interest them in going to college, developing programs for the state dairy organizations and similar activities.

Members of the resident staff collaborated in the development of subject matter for use in the dairy extension program. They served as speakers, assisted in collecting special dairy herd improvement association data. They made valuable suggestions regarding the organization of educational materials for effective use. This common interest in the success of the Virginia dairy extension program has made a greater, more effective service available to the state.

THE VIRGINIA DAIRY EXTENSION PROGRAM IN 1938
(Conditions that Determine the Program)

I. THE VIRGINIA DAIRY OUTLOOK, DECEMBER 1937

A. The General Dairy Situation

The immediate dairy outlook for Virginia is favorable. Improved consumer purchasing power has increased milk and milk products consumption sufficiently to create temporary shortages in some cities. Dairy prices have improved with the general price level and the purchasing power of butterfat on the farm is relatively high compared to feed commodities. The present favorable spread between dairy product prices and the prices of feeds is tending to stimulate production. With a low milk cow population, ample feed supplies, lower feed prices, rising dairy prices along with improved consumer demand, and prices for competing agricultural commodities maintaining at favorable levels, the immediate dairy outlook is encouraging.

Considered from the longtime standpoint, conditions in the dairy industry are likely to improve during the next three or four years. Under the existing prices for feeds and dairy products there is some incentive for farmers to market their feeds in the form of milk and dairy products. The 1937 harvest produced an ample feed supply and very likely the prices of feeds will continue relatively low compared to dairy product prices. The prices of meat animals probably will continue relatively high in relation to butterfat, at least through 1938, and may tend to discourage dairy production among keepers of dual purpose cattle, particularly in the Corn Belt.

B. Dairy Production Conditions:

The Feed Situation: The national 1937 feed grain harvest was 6% per cent larger than that of 1936, but about equal to the average for the ten years preceding the 1934 drought. Hay production per animal unit was above the average of recent years. Since livestock numbers are low and feed supplies quite large, dairymen may be expected to feed rather liberally during the current feeding season and still leave a normal carry-over at the end of the feeding period. It is to be expected that since the milk cow population is likely to continue low for a few years, and the prices of dairy products continue relatively high in relation to the prices of feeds, dairymen will feed more liberally to stimulate larger milk production per cow.

The longtime tendency has been for butterfat prices to rise in relation to feed prices. Since the drought of 1934 and 1936, however, butterfat prices have been unusually low compared to feeds. With average feed production during the next few years, one may anticipate a more normal price relationship between butter and feed grains, tending to re-establish the upward trend of dairy production.

The Dairy Cattle Population: The number of milk cows on farms has decreased continuously since 1933 until now the number of milking cows per hundred of human population is smaller than in any year since 1931. There are now 6 per cent less milk cows than at the peak four years ago. Although the low point seems to have been passed in the milk cow population cycle, there is little prospect of much material change in milk cow numbers before the end of 1936.

The decreased number of milking cows, the increased demand for dairy products, and the favorable beef price level have caused milk cow prices to rise. If the price of cattle continues high, many farmers will be encouraged to hold back breeding stock to increase their herds, thus reducing the marketing of cows and heifers. These reduced marketings which are likely to take place during the next year will tend to support the prices of cows and the peak for milk cow prices will probably be reached in 1939. Many Virginia dairymen have observed the shortage of good milk cows, and have started raising more herd replacements.

C. The Dairy Markets Situation:

Market Demand: During the depression fluid milk, cream, and ice cream were the only important dairy commodities to show a decline in consumption. The present trend in the consumption of these products, however, is definitely upward. Estimated consumtpion of fluid milk and cream in 1936 was only slightly less than the pre-depression peak in 1929. A survey of 186 leading markets showed that in September 1937 the average sales for these markets totaled 6,672,322 quarts of milk as compared with 6,332,912 quarts in September 1936, an increase of 5.36 per cent for September 1937. This trend in increasing milk consumption is clearly reflected in all Virginia cities at present, and with improved employment in the cities this trend will probably continue for several years.

The longtime trend in the per capita consumption of manufactured dairy products is definitely upward. The increased consumption already experienced has been due primarily to the increased per capita consumption of ice cream, concentrated milks, and cheese. There has been very little change in the per capita consumption of butter during the last three decades.

With prospects for further improvement in employment, the outlook for the next several years is for a larger consumption of ice cream. The consumption of ice cream has increased rapidly since 1932, the lowest year of the depression. In 1936 the output of ice cream in Virginia exceeded the peak year of 1929, by 19.6 per cent, and exceeded 1932 by 98.3 per cent.

The consumption of concentrated milk in 1936 exceeded any year since 1928. The consumption of evaporated milk increased at a rapid rate during the depression. Since 1933, however, the rate of increase has been less rapid. Production and consumption of concentrated milks will probably continue on an upward trend during 1938.

The output of concentrated milk in Virginia is gradually increasing. In 1935 the production was 13,295,440 pounds. In 1936 it was 13,508,667 pounds, an increase of 1.6 per cent.

Cheese consumption has continued to increase each year since 1932 and will probably continue to increase in 1938. The relatively high price of meats and the fact that employment conditions are not stabilized has stimulated the demand for cheese as an inexpensive source of good protein.

Dairy Prices: The longtime outlook for dairy prices is favorable. With better than normal harvests in 1937, feed prices have declined in relation to dairy product prices. Based on farm prices in October 1937, one pound of butterfat had the exchange value of 38.1 pounds of feed grains as compared with 20.7 pounds of feed grains in October 1936.

Wholesale prices of manufactured dairy products are relatively low when compared with the general level of commodity prices, but the longtime outlook is for some rise in this relationship. The major fluctuation in dairy product prices have been similar to the fluctuations in the general level of prices of basic commodities. The same factors that influence the general price level also affect the prices of dairy products in the same way.

II. THE BASIC DAIRY PROBLEMS IN VIRGINIA

A. Increasing Production Efficiency:

The first basic dairy extension problem is to increase productive efficiency so that dairy products may be provided to the consumer at a fair price that will assure profit to the dairyman.

Although productive efficiency is a relative term it has a definite meaning to the dairyman who must make adjustments when feed cost are high and milk prices are low and when competition is making in-roads on his sales. The term implies constant adjustment in the dairy farm operations to meet changing production and marketing conditions. Efficient production depends upon proper management; and proper management calls for intelligence and practical ability on the part of the dairyman. More home raised feeds of the right kind, more efficient cattle to consume the feeds, and a dairy farm organization to make the farm and the herd a properly coordinated business are essential to successful dairy farming. But the organization of an efficient dairy farm enterprise depends upon the knowledge and ability of the dairyman and it is the dairyman himself who is the largest factor in this first basic problem.

B. Fitting Production to Market Demand:

The second basic dairy extension problem is to stabilize production to effective market demand. Efficiently produced dairy surpluses frequently develop into ruinous gluts on the market when the surpluses do not move smoothly into actual consumption. In order to avoid expensive and burdensome surpluses, and to keep the market channels open, and to sustain prices such

educational work must be done among producers so that production can be intelligently adjusted to market demand. The falacy of producing more milk than is needed has been well demonstrated, but how to adjust the dairy farm enterprise to satisfy the market needs is an important basic dairy extension problem.

C. Improving the Methods of Marketing:

The third basic dairy problem is to establish better methods of distribution and marketing so that the commodities of the dairy will be available in consuming centers in sufficient quantities and at times when needed. The time when the individual can market his milk and dairy products as an individual has passed. If the best prices are to be realized throughout the year and if the market is to be protected for the benefit of all interests, marketing must be on a cooperative basis. In developing the true cooperative plan much educational work is needed among all agencies interested in dairy marketing. In fact, there seems to be some need for cooperation between certain cooperatives, if the domination and confusion in some markets are to give way for fair and orderly marketing.

D. Improving Living Standards on Dairy Farms:

The fourth basic dairy problem and the ultimate objective of dairying, is to improve the standards of living on dairy farms. Living standards on most dairy farms fluctuate according to the financial income from the farm, and it is not possible to improve the living standards without first impriving the dairy farm business enterprise. It should be every dairymens objective to gain from his business a standard of living equivalent to men equally circumstanced in other professions of businesses. To maintain a standard of living which will assure real enjoyment from life and provide the right inspiration for good citizenship, it is essential that the dairy farm business be so operated to provide the financial income needed. This problem is not a simple one, involved as it is, with sociological and economical problems, it suggests the need for cooperative action on the part of several agricultural extension agencies. Basicelly, improving the living standard of Virginia dairy farms is the important problem before us.

III. FACTORS CREATING THE BASIC DAIRY PROBLEMS IN VIRGINIA

A. Inefficient Dairy Production due to:

(a) Low Producing Cows
1. Lack of inherent milk producing ability in the cows
2. Improper feeding practices
3. Irregular calving attended by excessively long dry periods
4. Poor management
5. Disease in the herd

(b) Inadequate Herd Replacement Program
1. Too many low quality calves raised
2. Uneconomical methods of raising calves
3. Selling the best cows from the herd
4. Buying cull cattle from other herds

(c) Lack of Organized Breeding Programs Based on Facts:
1. Inadequate identifications of cattle
2. Definite knowledge of each cows producing ability lacking
3. Too few proved sires used
4. Lack of facilities for properly managing good bulls
5. Knowledge of practical genetic principles lacking
6. Lack of means for perpetuating good bulls in service
7. No longtime breeding program in effect on the farms

(d) General Dairy Mismanagement
1. Irregular barn routine
2. Haphazard methods of doing work
3. Improper feeds and undependable feed supplies
4. Too much feed purchased at too high cost
5. Poor or inadequate buildings and equipment
6. Inefficient labor
7. Lack of a disease prevention program
8. Poor labor distribution
9. Poor coordination of farm and dairy operations
10. Lack of well laid plans

B. Dairy Farm Operation Out of Adjustment with Markets due to:

(a) Dairy Farms Unbalanced and Unorganized
1. Farm not adapted to dairying because of land and location
2. Wrong crops grown
3. Improper facilities for producing milk
4. Herd not adapted to market
5. Lack of definite production system
6. Inability to make quick adjustments to meet market demands
7. Markets not easily accessable
8. Lack of a diversified program for utilizing temporary dairy surpluses
9. Dairy production program not correlated with farm croping program

(b) Competition With Other Forms of Agriculture
(c) Limited Commercial Outlet for Dairy Products
(d) Lack of Knowledge and Ability for Dairying

C. Poor Methods of Marketing due to:
(a) Lack of Cooperation Among Producers and Distributors
(b) Small Milk Supplies and Lack of Quality in Product
(c) Insufficient Capital to Meet Market Requirements
(d) Weak Leadership and Loose Organization Among Producers
(e) Lack of Incentive for Improved Marketing Methods
(f) Poor Standardization of Products and Distructive Competition in the Markets
(g) Over Emphasis of Butterfat Tests in Determining Retail Price Basis

D. Submarginal Living Standards due to:

(a) Lack of Knowledge and Appreciation for Improved Living Standards
1. Constricted mode of rural living
2. Reluctance to change old methods
3. Lack of social and business contact with better agricultural communities
4. Lack of community leadership and organization

(b) Inadequate Farm Income
1. Farms poorly located in relation to soil and markets
2. Lack of knowledge and aptitude for dairy farming
3. Faulty management, equipment and methods making production costs excessive
4. Poor market outlets for milk, butterfat and surplus stock
5. Low market prices for dairy farm commodities

IV - THE EXTENSION PROGRAMS FOR VIRGINIA

A. The Agricultural or Longtime Dairy Program

(a) To Increase the Productive Efficiency of Virginia Dairy Herds
1. Establish economic feeding methods
2. Raise sufficient, high quality feeds at home
3. Keep records and cull the herd
4. Develop proved sires and raise all herd replacements
5. Establish definite breeding program on the farms
6. Promote disease prevention and eradication programs
7. Improve the facilities and management on dairy farms

(b) To Fit Production to Market Demand
1. Encourage the production of good quality milk which can be sold at a price that will stimulate milk and dairy products consumption
2. Establish improved management methods on dairy farms
3. Encourage cooperative methods in the production and marketing of dairy products
4. Promote a consumer educational program through an organized State Dairy Council

(c) To Establish Improved Methods of Marketing
1. Organize dairy marketing on a cooperative basis
2. Develop cordial relations between producers, consumers and distributors
3. Foster and support the Virginia Milk and Cream Act as a means of stabilizing markets
4. Promote city dairy councils to stimulate milk consumption

(d) To Improve the Living Standards on Dairy Farms

1. Promote those dairy farm practices most likely to provide the financial income necessary to maintain a proper standard of living.
2. Cooperate closely with those other extension agencies working on rural social problems so that dairy farm families may get and enjoy those social advantages too often denied them.
3. Cooperate with those agricultural organizations such as the Grange, Farm Bureau, Dairy Cooperatives, etc., now striving for greater social advantages for rural families.

B. The Shorttime or Dairy Extension Program for 1936

(a) Dairy Herd Improvement Associations and Advanced Registry Testing Project.
(b) Dairy Cattle Breeding and Dairy Bull Registry Project.
(c) Cooperative Work with Dairy Organizations Project.
(d) 4-H Dairy Club Project.
(e) Dairy Manufacturing, Dairy Marketing, and Consumer Education Project.

V - THE DAIRY EXTENSION TEACHING PLAN FOR 1936

This phase of the program of work is outlined under the following project headings. The supervision of each project, the time of duration, the objectives, the goals, and the distribution of responsibilities are indicated under each project.

PROJECT I - DAIRY HERD IMPROVEMENT ASSOCIATIONS AND ADVANCED REGISTRY TESTING

Supervised by: R. W. Dickson, Asst. Extension Dairy Husbandman

Time: This is a continuous, longtime project

Objectives: This is a cooperative, result demonstration project involving the collection, tabulation, and analysis of milk production and cost account records kept on Virginia dairy herds to improve dairy farm practices and to increase the efficiency of dairy production.

Goals:

1. Increase the record dairy herd improvement association membership from 450 to 475 herds, or at least 17,000 cows.
2. Extend the project into at least 5 new counties.
3. Hold one combination record analysis and subject matter meetings with each association.
4. Issue twelve monthly D.H.I.A. news letters to the entire D.H.I.A. membership.
5. Assemble the production and cost data from each D.H.I.A. herd for compilation and analysis by the U. S. Bureau of Dairy Industry.
6. Furnish each association member with an analysis of his D.H.I.A. records.

7. Hold two series of D.H.I.A. supervisor's conferences to formulate policies.

8. Hold 10 dairy herd management and feeding schools.

9. Consolidate the individual associations as much as possible and have each association elect officers and a Board of Directors.

10. Increase the Advanced Registry testing service to include 10 per cent more cows on test in the Herd Improvement Registry of each breed.

Project Procedure and Responsibilities:

The Association: The association officers are charged with the responsibility of administering the business of the association. The association shall purchase its own equipment, and supplies, approve and hire their supervisors upon recommendation by the V.P.I. Dairy Department. The association shall require an annual business report from its officers and a progress report from its supervisor. Dismissal of the supervisor shall rest with the association. The association officers shall keep the V.P.I. Dairy Extension Department informed of the associations activities so that the extension dairyman may cooperate closely in the interest of the work.

The D.H.I.A. Supervisor:

1. Conduct all D.H.I.A. tests for the association membership as set forth in "The Cow Tester's Manual", BDIM-699(Revised)October 1937.

2. Submit to the state dairy extension office each month one copy of all D.H.I.A. monthly records for each herd, along with the regular association summaries.

3. Officially identify by ear tag and report on BDIM-717 forms all cattle tested during the year.

4. Report the 305-day production records on all D.H.I.A. cows as called for on the BDIM-718 forms.

The County Agricultural Agent:

1. Advise with the supervisor on association problems, solicit new members when necessary, counsel and cooperate with the extension dairyman, supervisor, and association officers in carrying out the educational phases of the project.

2. Cooperate in arranging for meetings and issue regular reports to association members, and issue regular publicity to the local newspapers.

3. Cooperate with the extension dairyman and supervisors in collecting and analyzing records in disseminationg dairy production and farm management information based on association records.

4. Arrange for two association meetings each year, one meeting to be an annual meeting for the election of officers and transaction of association business.

5. Distribute, preferably at the annual meeting, the National Dairy Association "Certificates of Production" and other awards for noteworthy accomplishment.

The Extension Dairy Husbandman:

1. Secure capable supervisors when needed, verifying thier credentials and abilities before recommending them to the association officers. Provide all record books, forms and other data recording materials required and render general supervision and assistance to each association in the conduct of its affairs.

2. Assemble, tabulate and analyse the yearly D.H.I.A. records from each association, furnishing summaries of the analytical results to the county agents, D.H.I.A. supervisors, and association members. Furnish timely publicity material on the progress of the D.H.I.A. program.

3. Cooperate with the county agent, through farm visits, meetings and conferences, in analyzing the factors affecting the returns on D.H.I.A. farms.

4. Cooperate with the county agent and D.H.I.A. supervisor in preparing and presenting D.H.I.A. subject matter and in devising improved teaching methods for the establishment of better practices on dairy farms.

5. Prepare the list of D.H.I.A. members, qualified to receive the "Certificate of Production" from the National Dairy Association and furnish the "Certificate of Production" to the county agent for distribution among the qualifying D.H.I.A. members.

6. Exert direct supervision over the work of each herd improvement association through frequent contacts and conferences with the county agents, the D.H.I.A. supervisors and the association officers in the several counties.

7. Conduct an annual D.H.I.A. supervisors conference on a sectional basis to study the progress of the work and formulate policies.

8. Prepare regular monthly D.H.I.A. news letters, to inform the D.H.I.A. supervisors, county agents and D.H.I.A. members of the progress of the work.

9. Supervise the Advanced Registry testing work for the state, providing complete monthly reports on all A. R. testing, to the individual breeders and news publications.

10. Contact each breeder doing A. R. testing at least once each year to confer with him on the progress of the work and to devise methods for utilizing the results.

11. Keep informed on the progress of the project to exert the necessary leadership in formulating policies and promoting the testing work in the interest of the greatest number of dairymen.

PROJECT II - DAIRY CATTLE BREEDING AND DAIRY BULL REGISTRY

Supervised by: R. G. Connelly, Extension Dairy Husbandman

Time: This is continuous longtime project

Objectives: To discover and evaluate superior inheritance in dairy cattle located in Virginia dairy herds, and to preserve, concentrate, and utilize the desirable inheritable traits through practical dairy cattle breeding programs based upon established genetic principles.

Goals: 1. Continue the distribution of purebred dairy bulls, sired by meritoriously proved sires and out of high record daughters of good proved sires.

2. Extend the scope of the Virginia Dairy Bull Registry as an organized method of proving, evaluating, classifying, and perpetuating the usefulness of promising D.H.I.A. bulls to include all D.H.I.A. herds.

3. Prepare, for the owners, special analysis reports on all bulls proved in the Dairy Bull Registry.

4. Assemble production data for proving all bulls eligible in the dairy herd improvement associations, and submit the data to the U. S. Bureau of Dairying for compulation, analysis and verification.

5. Initiate a program of Brood Cow analysis to identify lines of superior dairy cattle breeding.

6. Hold at least 10 dairy cattle breeding schools and breeder conferences.

7. Organize 8 Cooperative Dairy Bull Associations.

Project Procedure and Responsibilities:

The D.H.I.A. Supervisor:

1. Identify and report all D.H.I.A. cattle on the official "D.H.I.A. Identification Reports", Form HDIS-717 to facilitate the proving of bulls and identification of breed cow families.

2. Enter in the Virginia Dairy Bull Registry all bulls owned and used by the D.H.I.A. members for pedigree analysis.

3. Report all 305-day production records on "Permanent D.H.I.A. Record Report" HDIM-718 for the proving of bulls and to facilitate the breeding analysis of the herds.

4. Colaborate with the dairy farmers, the extension dairy husbandmen and the county agricultural agents in the selection and placing of desirable dairy bulls.

The County Agricultural Agent:

1. Cooperate in enrolling bulls in the Dairy Bull Registry and in assembling the necessary record information for proving the sires.

2. Cooperate in selecting and transferring by sale, lease, exchange or awards, good purebred dairy bulls according to the Bull Registry standards for production.

3. Induce owners of purebred dairy bulls, through publicity and personal contact, to join a dairy herd improvement association and to enter the bulls in the Virginia Dairy Bull Registry as step toward proving and classifying the bulls.

4. Assist with the dairy herd improvement association supervisor in preliminary educational work, pedigree assembling, record compilation and other basic work in connection with the establishment of the dairy bull improvement registry.

5. Assist in contacting, influencing all bull owners in the country to build safety bull pens.

6. Cooperate in the promotion and conducting of a dairy cattle breeding shcool in those counties where such schools may be feasible.

7. Encourage the organization of cooperative Dairy Bull Associations.

The Extension Dairy Husbandmen:

1. Counsel and advise with county agents, D.H.I.A. supervisors and D.H.I.A. members in the selection of dairy bulls in organizing individual farm breeding programs.

2. Supervise the promotion of the Virginia Dairy Bull Registry, entering the bulls in the Registry, preparing and classifying pedigrees, authenticating bull proof records, classifying the proved bulls and submitting the owners names to the Virginia State Dairymen's Association for the diploma of merit.

3. By means of sales lists, personal letters and personal contacts bring prospective buyers and sellers of good bulls together in sales transactions.

4. Furnish blue prints, bills of material, and instructions for building bull pens.

5. Carry on regular publicity on the various phases of the project.

6. Develop subject matter for presentation at the various breeding schools and supervise the general instructional program in dairy cattle breeding.

7. Promote cooperative dairy cattle breeding through the organization of bull associations.

PROJECT III - COOPERATIVE WORK WITH THE VIRGINIA DAIRY ORGANIZATIONS

Supervised by: R. G. Connelly, Extension Dairy Husbandman

Time: This is a continuous, longtime project.

Objectives: To develop a larger, better coordinated dairy improvement program for the state through cooperation with the state dairy breed associations, the Virginia State Dairymen's Association, the Virginia Dairy Products Association, the Virginia Dairy Council and other state dairy production, manufacturing and marketing organizations.

Goals: 1. Encourage each dairy organization to develop a definite dairy extension program.

2. Cooperate with each breed association and with the Virginia State Dairymen's Association in building up their enrollment and in getting definite leadership established in the dairy counties of the state, thereby building a stronger, more unified dairy extension set-up for Virginia.

3. Assist each of the three Virginia dairy breed associations, in organizing and developing the programs for their annual summer field days and their annual winter meetings.

4. Encourage the development of definite dairy extension programs by each breed association with particular emphasis upon the 4-H Dairy Club work.

Project Procedure and Responsibilities:

The County Agricultural Agent:

1. To cooperate with the dairy breed association, the State Dairymen's Association, and the V.P.I. Dairy Extension Department in the dissemination of publicity and the development of programs for the various association meetings.

2. Utilize the facilities of the state dairy organizations in promoting local dairy enterprises.

3. Use the local dairy organizations in organizing and promoting the county dairy extension program.

4. Prevail upon the local dairymen and local dairy organizations to become closely affiliated with the state dairy organizations to permit more effective development of the state dairy promotion program.

The Extension Dairy Husbandman:

1. Assist and encourage the dairy breeds associations and the State Dairyman's Association, as well as the several dairy cooperatives, in forming and promoting longtime dairy development program.

2. To assist the several organizations in the development of programs for their summer and winter meetings, procuring speakers, arranging for meeting places, and preparing publicity.

3. To cooperate closely with the county agents in developing county dairy organizations through which the county dairy extension program may be developed.

4. Assist and encourage the three Virginia dairy breed associations in promoting and conducting annual dairy cattle sales.

PROJECT IV - 4-H DAIRY CLUBS

Supervised by: R. G. Connelly, Extension Dairy Husbandman

Time: This is a continuous project

Objectives: To build better rural citizenship and better standards of rural living by teaching rural boys and girls improved methods of dairy husbandry and dairy farming.

Goals: 1. To establish with the cooperation of the state 4-H Club Department, a standard three phase 4-H dairy club teaching program for the state, including calf raising, heifer raising, and cow and calf phase, with standard achievement requirements for project completion.

2. To promote interest and increase the enrollment in the 4-H dairy project to 600 members.
   (a) Encourage the state dairy breed associations to adopt 4-H dairy club promotion programs.
   (b) Conduct 4-H dairy cattle judging demonstrations and contests in 15 counties.
   (c) Promote 4-H dairy shows in 5 counties.
   (d) Stage a state 4-H dairy show, to include a 4-H dairy cattle exhibit and a 4-H dairy cattle judging contest.
   (e) Participate in one out-of-state 4-H Judging Contest
   (f) Participate in at least one out-of-state Dairy Demonstration Contest.

3. To organize and develop subject matter for all counties having organized 4-H dairy clubs:
   (a) Furnish each club member with a 4-H dairy manual to be used as the basis of project instruction.
   (b) Stage a 4-H dairy cattle judging and show fitting demonstrations in at least 6 counties.
   (c) Cooperate with the 4-H club Department in presenting subject matter at the 4-H dairy camps, at the state 4-H short course.
   (d) Train 4-H dairy demonstration teams in 15 counties.

Project Procedure and Responsibilities:

The County Agricultural Agent:

1. Supervise the promotion of all 4-H dairy contests, shows, demonstrations, tours, and meetings in the counties.
2. Hold at least one 4-H dairy show, judging contest, tour or demonstration within the county.
3. Assist club members in the location, selection and purchase of 4-H dairy animals, preferably with the cooperation of some member of the particular dairy breed association.
4. Call the 4-H dairy club members together at regular intervals for subject matter instruction and to have charge of all 4-H dairy instruction in the county.
5. Publish 4-H dairy club news items in the local papers regularly.

The Extension Dairy Husbandman:

1. Assemble and organize the 4-H dairy subject matter used in the state on a standard basis.
2. Assist the county agent and club members in the location, selection, and purchase of dairy animals.
3. Promote interest of the state dairy organizations in the state 4-H dairy club project, particularly in the state 4-H dairy show.
4. Cooperate with the county agent in promoting 4-H dairy shows, demonstrations and contests.
5. Prepare regular publicity material and reports on 4-H dairy club work.
6. Take the initiative in promoting and staging the state 4-H dairy show activities.
7. Encourage and assist the county agent in organizing and conducting his 4-H dairy program on a standard longtime basis.
8. Promulgate a definite system of project reporting and regular monthly publicity.

PROJECT V - DAIRY MANUFACTURING, DAIRY MARKETING AND CONSUMER EDUCATION

Supervised by: G. L. Fleshman, Dairy Manufacturing Specialist

Time: This is a continuous, longtime project

Objectives: To continue the promotion of Dairy Council and other public relation programs throughout Virginia; to improve quality in the production and manufacture of dairy products; to maintain a dairy products standardization service; to assist operators with plant management problems, and to assist dairy organizations with phases of dairy marketing; to assist farmers with home dairy manufacturing problems.

Goals: 1. Organize Dairy Council units in Norfolk, Danville, Lynchburg, Newport News, and other Virginia milk markets, in an effort to increase the consumption and sales of fluid milk, and to include ice cream in the program as early as that phase of the project appears to be practical.

2. Cooperate with the state and national dairy agencies in formulating quality improvement programs for both raw and manufactured dairy products for Virginia.

3. Maintain and stimulate interest in the present program of consumption control tests in an effort to standardize the composition of dairy products manufactured in Virginia.

4. Collaborate with the Virginia Dairy Products Association in promoting a state-wide safety program for the dairy industry in Virginia.

5. Maintain a dairy industry information service, which will consist of a regular news letter called the "Virginia Dairy Industry Bulletin", this bulletin to include Virginia dairy news, information on dairy manufactures, research, new developments in the industry with seasonal recommendations.

6. Cooperate with the Virginia Dairy Products Association and the Dairy and Food Division in formulating and promoting educational market stabilization, and quality improvement programs.

7. Cooperate with the various dairy marketing agencies in an effort to stabilize milk and dairy products prices in Virginia and eliminate, as much as possible, uneconomic and unfair trade practices.

8. Conduct home dairy manufacturing projects in cooperation with the home demonstration agents.

Project Procedure and Responsibilities:

Dairy Council Worker:

1. It is the duty of the Dairy Council Worker to promote and teach health education in the schools and organized groups, to keep the consuming public informed of the relative merits of milk in the dietary, and to create a more harmonious feeling between the public and the industry.

Virginia Dairy Products Association:

1. The duties of the Virginia Dairy Products Association are to foster stabilization of the industry, promote quality improvement programs, create merchandising and consumer education programs, eliminate uneconomical and unfair trade practices, maintain a harmonious feeling between members and producers associations, and control legislation effecting the industry.

Dairy and Food Division:

1. The duties of this agency are to enforce the sanitary regulations pertaining to the dairy industry in Virginia, assist with quality improvement programs, and set up rules and regulations for the sanitary and composition control of milk and dairy products.

Duties of Dairy Manufacturing Specialist:

1. Analyze and study the dairy conditions in the several counties and to outline and develop a working program for improvement.

2. Outline and develop the subject matter and supervise the publicity for all quality improvement and market stabilization meetings.

3. Promote and organize dairy council units in suitable markets where no public relation program now exist, and supervise the work in the organized markets.

4. Maintain and promote a composition control service in an effort to encourage standardized quality dairy products as well as assist the manufacturing plants in meeting quality and legal requirements.

5. Issue regularly a monthly news letter called the "Virginia Dairy Industry Bulletin" to all the dairy plants in the state, and to the leading dairy journals.

6. Render both technical and practical personal service to all dairy farms and plants having problems relating specifically to buildings, equipment, milk processing or manufacturing.

7. Cooperate with the Virginia Dairy Products Association in planning and promoting its program for the betterment of the industry.

8. Cooperate with the resident teaching staff in the proper training of students and plant employees in dairy manufactures.

9. Collaborate with the home demonstration agents in promoting home projects in butter, cheese, and ice cream manufacturing.

METHODS USED IN EXTENSION TEACHING PLAN

Due to the scope of the dairy extension program, only the most direct and most effective methods of extension procedure were followed. They were:

1. Meetings and conferences
2. Farm and dairy plant visits
3. Subject matter articles for newspapers and other publications
4. Radio talks
5. Educational exhibits
6. Personal advisory letters
7. Circular letters
8. Tours, field days and picnics
9. Breeding and feeding schools
10. Contests
11. Local leader instruction

Meetings and Conferences: The types of meetings were similar to those of previous years. They were - Dairy Herd Improvement Association meetings; Cooperative Dairy Bull Association meetings; Subject Matter meetings; under the standard Virginia community plan, 4-H Dairy Club meetings; Local and Breed Association meetings; Cooperative Milk Producers Association meetings; Regional and Local Subject Matter Conferences, and Marketing Association meetings. In so far as possible these meetings were held under the direction of a definite organization, and usually the county agent cooperated in arranging for the meetings. Practically all the meetings and conferences were devoted to subject matter information calling for the use of charts, diagrams, mimeographed material, bulletins and supplementary publicity material. Project planning meetings were also held.

Farm and Dairy Plant Visits: Frequently problems demanding specific attention required that the extension dairyman visit farms and creameries to get first-hand information and to make specific recommendations. The extension dairyman usually invite the local county agents to accompany them on such visits so that they might be fully informed on the problems. Usually such visits were arranged through the county agent. It has been the policy of the extension dairyman not to make farm and creamery visits that could be made satisfactorily by the county agent.

Subject Matter Publicity Articles: The extension dairyman prepared regular monthly (sometimes more frequently) dairy publicity articles. These articles were used extensively in the "Virginia Agricultural Extension News", the newspapers of the state, dairy periodicals, "The Virginia 4-H Club News", "The Virginia Farmer", "The Southern Planter", and the "Maryland Farmer".

Radio Talks: Subject matter material and dairy topics of state-wide interest were discussed on several occasions from the WDBJ-Roanoke radio studio, and other stations in the state. Dairy subject matter was also broadcast from radio stations at Richmond, and Norfolk, covering the greater portion of the state. Much dairy subject matter prepared by the extension dairymen was used by county agents in local broadcasts.

Educational Exhibits: Due to the expense involved, strict limitations were placed on the number of exhibits used in 1938. A number of exhibits were used in connection with the 50th annual Virginia State Dairymen's Convention. Exhibits were also used in demonstrations in the feeding and breeding schools, field days, tours, fairs and shows. While it has been difficult to measure the influence of exhibits in changing habits and practices, it is known that exhibits are expensive to prepare and they are not as effective as certain other extension methods.

Personal Advisory Letters: This method was used in treating many direct inquiries on dairy problems. Problems in breeding, feeding, and rations, herd management, milk marketing, market organization, dairy plant operation and dairy manufacturing were frequently handled by means of correspondence. This permitted a certain measure of economy in rendering the service.

Circular Letters: Several mimeographed circular letters were used in furnishing specific information on generalized dairy problems, particularly feeding problems. These letters seemed to meet a definite need among county agents and others who are called upon to give rather specialized and technical advice at short notice. It is hoped that this method of disseminating information may be used more extensively.

Tours, Field Days and Picnics: This extension teaching method was particularly effective during the summer months, when attendance at dairy meetings is more likely to be small. Many people learn best by example, therefore, tours, field days and picnics were conducted for recreational as well as informative purposes. Well selected demonstrations in the form of dairy herds, lespedeza pastures, permanent pastures, alfalfa fields, dairy barns and equipment, proved sires, bull pens, milk houses, dairyman's homes, gardens, etc., were used as object lessons on many occasions during the summer months. The fellowship, neighborliness and mutual understanding of common problems gave these field days, tours and picnics a high value as extension methods. They should be greatly encouraged as a economical form of rural recreation and instruction.

Breeding and Feeding Schools: Few dairymen have the time or the funds to take courses at the college. To meet this situation and at the same time to build up the proper interest in certain dairy extension projects a limited number of breeding and feeding schools were conducted. These schools were conducted on a one and two-day basis with other members of the dairy department cooperating. The schools have always been very well supported and they entirely justify the time. This method of extension teaching is worth expanding since it creates much local interest in the whole dairy extension program. It is definitely known that these schools have been responsible for correcting faulty breeding and feeding practices on many dairy farms represented in the schools.

Contests: The contests conducted in Virginia were limited largely to 4-H club members. The contests were staged not only to develop competition interest, but to also impart subject matter ideas among the contestants. Contests in judging dairy cattle and dairy products and cream grading contests among cream producers and ice cream and butter grading contests among others comprised the forms of competition conducted among 4-H dairy club members and adult dairymen. As a whole the contests were beneficial because with each contest it gave some representative of the dairy department an opportunity to discuss the various dairy products samples or the cattle in the contest, pointing out the defects with their causes and the corrections.

Local Leader Instruction: Dairymen who cooperate in the various dairy extension projects and advise friends and neighbors on results obtained as a result of changed practices are regarded as cooperating local leaders. Many members of the Virginia dairy herd improvement associations and the cooperative dairy bull associations fall into the category of demonstrating local leaders. They demonstrate to neighbors and others improved methods of breeding, feeding and dairy herd management. These people have been a strong influence in furthering dairy extension work. Among other such local leaders who are receptive of dairy extension teaching and so demonstrate new ideas are the 4-H dairy members, creamery managers and the dairy bankers. They have a direct interest in bringing about an improved condition in dairying and have assisted in promoting the state dairy extension program.

THE ORGANIZATION AND DISTRIBUTION OF RESPONSIBILITY WITH RESPECT TO OTHER BRANCHES OF AGRICULTURAL EXTENSION

Dairy extension work is just one branch of the Virginia Agricultural Extension Service. It is promoted, not only from the standpoint of meeting the demands of dairying, but also to develop a well balanced agriculture throughout the state. It is recognized that dairy extension work must be so coordinated with the other branches of extension work that the exigencies of Virginia agriculture may be promptly and adequately met. It is necessary therefore, that the extension dairymen look to the Director of Extension for the policies and general procedure to be followed in developing sound dairy extension programs.

The extension dairymen and county agents are jointly responsible for the success of failure of any dairy extension project. Therefore every effort has been made to promote dairy extension program in close cooperation with the county agents of the state. Usually, the county agent is expected to stimulate local interest, arrange for projects, and do much of the follow-up work. The extension dairymen on the other hand are expected to provide the correct information in usual form for the projects, to recognize the need for projects, to cooperate in the administration of the projects and in the end determine the measures of success or the reasons for, as well as corrections for, project failures.

PROJECT I

DAIRY HERD IMPROVEMENT ASSOCIATIONS AND A. R. TESTING

Administrative policies affecting the project for the year 1938 were the same as for the past few years. No major changes were inaugurated; however, closer supervision of the work was emphasized in order to increase the accuracy of the records and to make the record analysis more promptly available to cooperating dairymen. In March 1938 the method of figuring production records of dairy herd improvement association cows on the yearly or twelve month basis was discontinued. Production records are now figured on the lactation basis. This change has met with the general approval of cooperating dairymen and has tended to stimulate interest in the proved sire program, and in herd analysis work. Also it has brought to the dairyman's attention the cow as a functioning unit of the herd. From the administrative viewpoint the change to the lactation basis will facilitate the work of supervisors in making prompt and accurate reports of the 305-day lactation records.

The project has continued to grow at an encouraging rate. The peak of association members and cows on test was reached during 1938. Present indications are that the dairy herd improvement association project will continue to grow unless adverse economic conditions arise.

The D.H.I.A. system of permanent identification of dairy cattle established in 1936 with the assistance of the Virginia State Dairymen's Association and the U. S. Bureau of Dairy Industry has continued to grow. A total of 7,278 D.H.I.A. ear tags have been issued to supervisors. Each of the 51 dairy herd improvement associations have adopted the permanent identification system. The prospects are good for a 100 percent identification of all D.H.I.A. cattle in Virginia by this method. Supervisors use the specially prepared D.H.I.A. ear tags to identify all calves and cows that do not have a T.B. or Bang's ear tag. In making identification reports supervisors are allowed to report registration numbers of registered cattle, and D.H.I.A., T. B., or Bang's Disease ear tag numbers of grade cattle. All of these identifications are permanently filed in the state office and the U. S. Bureau of Dairy Industry. To date 9487, or 60 percent, of the D.H.I.A. cows have been reported for permanent identification.

Lactation record reports for permanent record, for the proving of sires, and for herd analysis is another service added to the regular work of dairy herd improvement associations. Supervisors make reports of all cows as they complete a 305 day lactation record. This phase of the D.H.I.A. work is just getting under way and indications are that lactations of all D.H.I.A. cows will be reported in the near future. To date lactation records of 4,168 cows have been reported. Administrators of this project find these records invaluable in the pedigree service rendered to dairymen.

During 1938 regular routine practices were in effect as in previous years. Every D.H.I.A. member received twelve complete monthly records on his herd, and an accurate and complete record book for his

herd at the end of the year. Each supervisor submitted to the Dairy Extension office each month a complete copy of all records for the month on his particular D.H.I.A. herds. These records were checked for completeness and accuracy, serving as a check on each supervisor's work for the month. This procedure has been valuable in maintaining regular testing and general efficiency in the testing work.

D.H.I.A. herd record books were inspected during 1938 to determine the accuracy and completeness of the data for adjustments in herd and farm management practices and the proving of bulls and identification of breed cowfamilies. Visits to D.H.I.A. herds afforded an opportunity to discuss problems with dairymen and to advise them on sound dairy herd and dairy farm management practices. These visits also were a means of creating confidence and better understanding among all individuals concerned with the success of the work. D.H.I.A. records are fast becoming the fundamental basis on which breeding cattle are selected. Wide use is being made of the records in breed association cattle sales and private sales, since cattle buyers are demanding more production information on the cattle they buy.

Monthly barn sheets of each herd in each association were submitted to the Dairy Extension office as a protection to the dairyman against loss of his herd records. Also these monthly barn sheets reports are used for various types of herd management studies. In November 16,877 individual cow records were submitted from 442 dairy herds, comprising 21 dairy herd improvement associations. These associations operate in 30 of the 100 Virginia counties.

These monthly records serve as a basis for adjustment recommendations from the extension dairymen to particular association members and others. Also these records are used as a basis for accurate checking on the progress of the project at frequent intervals, and as a basis of issuing monthly reports to more than 700 dairy farmers and others directly interested in the work. The monthly reports include production averages that enable individual dairymen to gauge their positions with respect to other herds in the association and state. Some associations now have waiting lists of dairymen who want the D.H.I.A. service which indicates an upward trend in association interest.

A series of dairy herd improvement association supervisors and dairyman's conference meetings were held in 1938 to establish new policies and coordinate the several phases of the testing work. There were four regional conference meetings with D.H.I.A. supervisors, dairymen, and county agents. Project phases considered at these conferences were the permanent identification of all association cattle with D.H.I.A. ear tags, the responsibilities of the county agent, the supervisor and the D.H.I.A. member, the systematic entering of all D.H.I.A. bulls in the Virginia Dairy Bull Registry, the keeping of permanent herd record books, and the correct technique of the testing work. Based on the great amount of interest displayed at these meetings it is now an established annual affair. These meetings provide an excellent opportunity for a more complete understanding among those responsible for the success of the testing service.

In addition to the regional cow testers and dairyman's conference meetings, there were more than twenty meetings called especially for D.H.I.A. members to study the results of their years test work. Complete summary reports of the associations were prepared and presented with the idea of demonstration the value of sound dairy herd management practices. Subject matter developed in these meetings was developed under the following general headings: Records the Basis of Feeding to Meet Production Requirements; Records the Basis of Sound Breeding Practices; Records the Basis of Culling the Herd, and Records the Basis of Dairy Herd Adjustments to Meet Changing Economic Conditions.

Expansion in the Virginia D.H.I.A. program has been rather consistent from 1923 to 1936; however, the number of associations, the number of herds on test, the number of cows on test and the average production per cow was greatly increased in 1936. In 1935 there were 27 associations, 335 herds on test, 11,500 cows on test, and an annual average production per cow of 300 pounds of butterfat. In 1936 there were 31 associations, 435 herds on test, 16,152 cows on test, and an annual average production of approximately 325 pounds of butterfat. (Actual production not yet determined). In October 1936 the peak of cows on test for the 13 years of D.H.I.A. work in Virginia was reached. There were 445 herds, including 16,611 cows on test.

The average yearly production per cow in 1937 was 7,722 pounds of milk, and 325 pounds of butterfat, as compared with 7,231 pounds of milk and 300 pounds of butterfat in 1935. This increase of associations, herds on test, numbers of cows on test, and the increase in average production is significant. The results of the testing service is being reflected in greater and more efficient production in the cooperating herds.

Year after year greater demand is being made of Virginia dairy herd improvement association records. The Virginia Holstein-Friesian Club and The Virginia Jersey Cattle Club utilized to good advantage the D.H.I.A. production records of Holstein and Jersey cattle consigned to their annual sale. These records composed the bulk of the production found in the pedigrees, and they were responsible to a large extent for the favorable prices at which the cattle were sold.

Six one and two-day dairy schools were held during the year. In these schools special D.H.I.A. herd analyses were developed to study, not only the feed costs of production, but also the causes of loss and profit, as well as methods for correcting unprofitable dairying as it existed in particular D.H.I.A. herds. These schools were held in an effort to study the basic factors affecting the production and income from D.H.I.A. herds. The response to these dairy schools have been uniformly good; D.H.I.A. members generally become intensely interested in the records, since the data pertained directly to the production conditions affecting them. The prospects are good for the further enlargement of this plan of D.H.I.A. record utilization.

Virginia's D.H.I.A. work since 1924 has increased 107 percent in association members; 85 percent in herd members, and 119 percent in cow members. During 1938 thirty-one dairy herd improvement associations, representing 436 herds and 16,182 cows, were operating throughout the state. A brief study of Table I indicates that a new high of number of associations and members of cows on test was reached in 1938.

Three new associations were organized in 1938. They include Carroll-Grayson, Frederick, and Rockbridge associations. They include 19 herds and 448 cows. These associations are still small; however, indications are that they will make considerable progress during the next few years. They were organized in undeveloped dairy sections of the state in order to provide the testing service to the few dairymen who desired it. New milk product manufacturing plants in the territory of these associations should aid materially in increasing D.H.I.A. work.

TABLE I

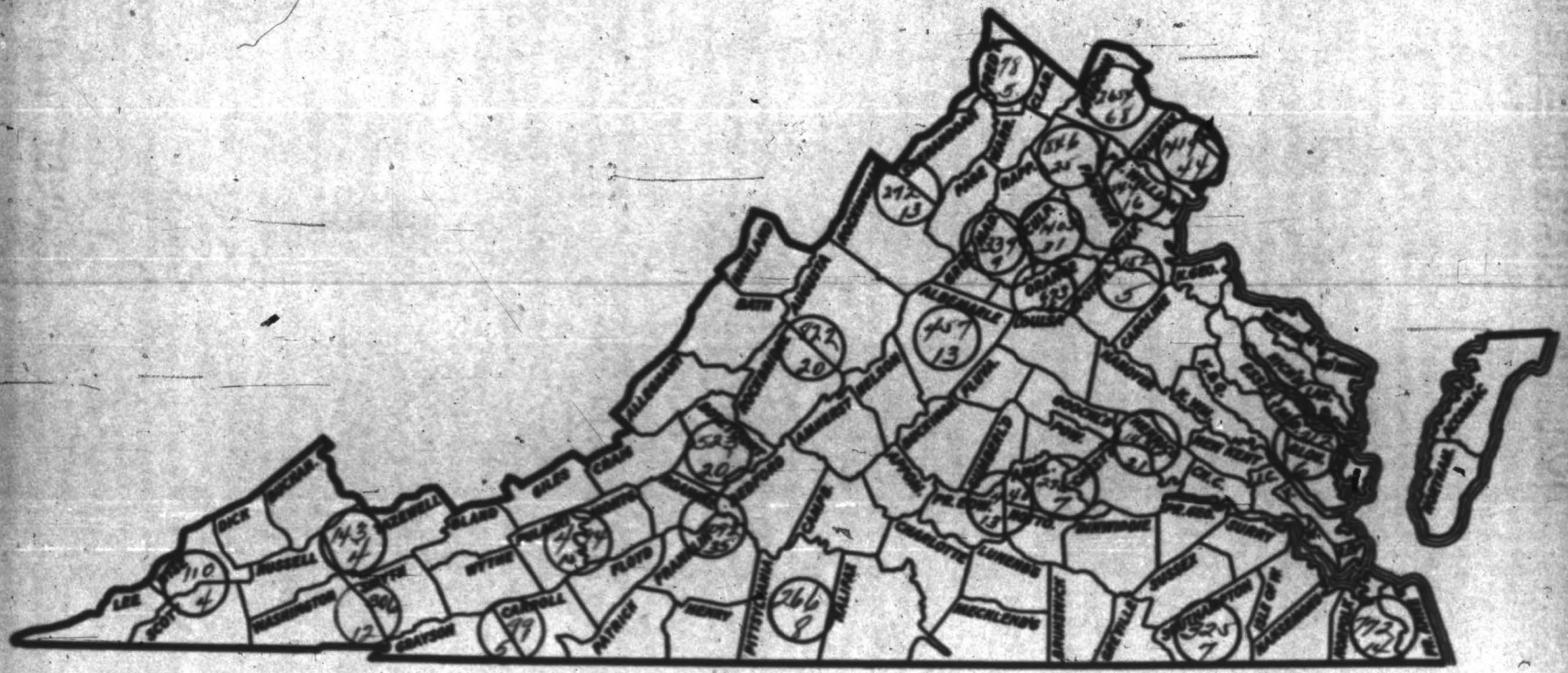
Fifteen Years of Progress in Virginia Dairy Record Work

Year	No. Associations (1)	No. Herds on Test (1)	No. Cows on Test: [illegible]	Indicated Averages: [illegible]	B-fat (2)	No. Cows: Culled (2)	No. Bulls: Bought
1938	31	436	16182	Not yet reported		2857	39
1937	28	397	14396	7722	325	3069	45
1936	24	364	13382	7617	313	2837	31
1935	23	342	12490	7442	308	2870	45
1934	26	336	11984	7251	300	[illegible]	23
1933	27	325	11900	7256	300	[illegible]	22
1932	28	377	13970	7371	302	2233	32
1931	24	363	13289	7308	303	2167	58
1930	20	305	10983	7268	299	1919	70
1929	20	442	12883	7226	297	1660	71
1928	20	422	12304	7104	294	1706	77
1927	21	407	11468	6931	289	1508	65
1926	18	353	9963	6805	284	1432	69
1925	16	346	9010	6568	265	1866	70
1924	15	281	7365	6749	279	1044	56

(1) Average for the year
(2) Figures taken from tabulations made by the Bureau of Dairying, U.S.D.A.

Table No. I presents a summary of D.H.I.A. development in Virginia for the past 15 years. In 1938 there was an increase of 3 associations, 39 herds and 1,786 cows on test over 1937. Production averages have increased from a low of 265 pounds butterfat in 1925 to a high of 325 pounds butterfat for 1937. Production averages for 1938 are not yet available, but the present indications are that they will exceed those of 1937.

Chart No. I supplements Table No. I and shows graphically the trend in D.H.I.A. testing, the average butterfat production and the number of cows on test from 1924 to 1938.



○ Associations. Upper number is number of cows in association. Lower number is number of herds in association.

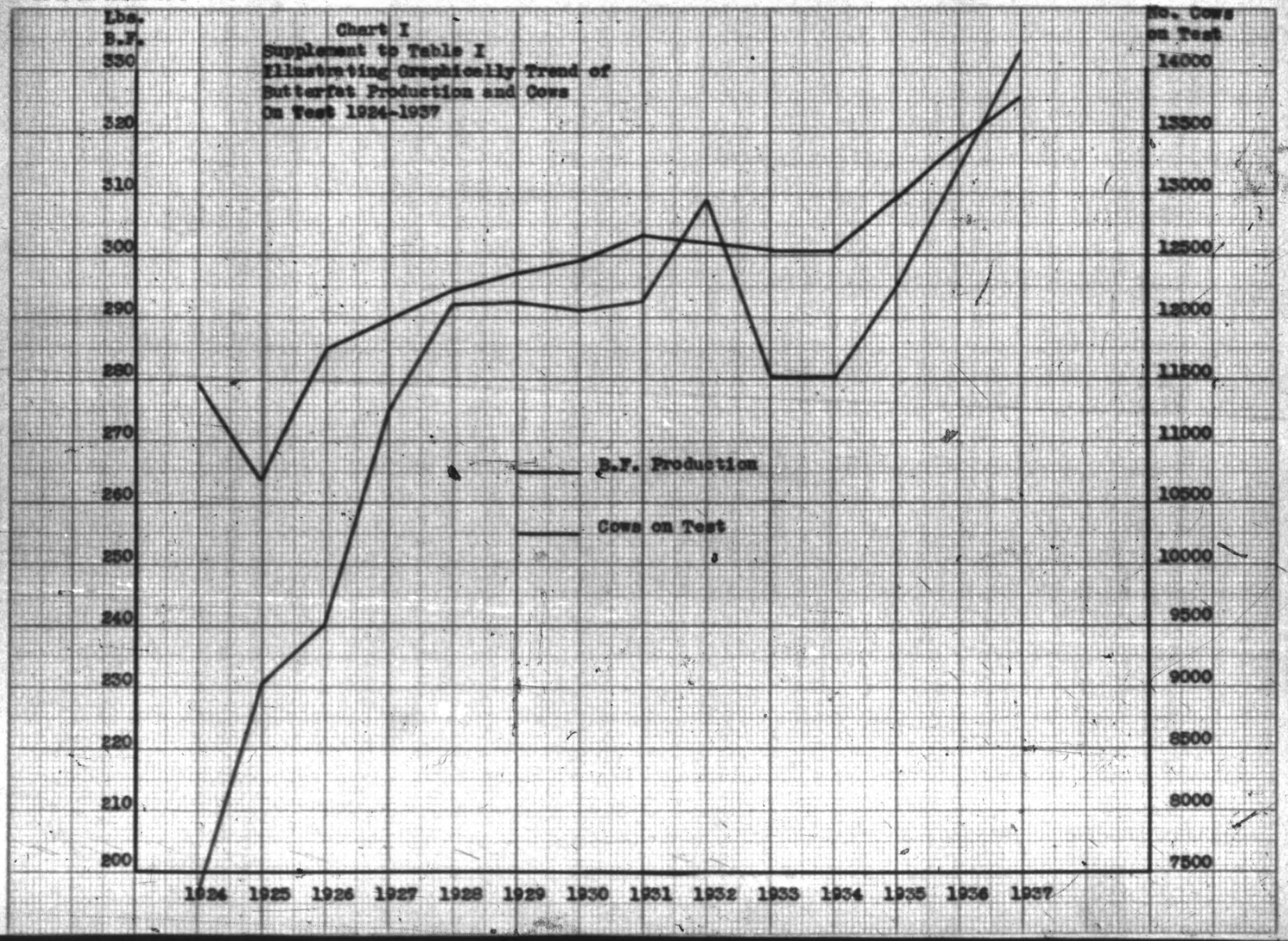


Chart I
Supplement to Table I
Illustrating Graphically Trend of
Butterfat Production and Cows
On Test 1924-1937

TABLE II

Relative Efficiency of Virginia D.H.I.A. Cows

Range of Prod. B-fat	Av. Yearly Prod. per Cow	No. Cows	Yearly Feed Cost per Cow year	Av. Yearly Return over feed cost per cow year	No. Cows of varied prod. capacity required to earn a return of $2,000 over feed cost	Yearly Amt. of B-fat put on the market by cows of different groups
1-49	19	1	$45	$-26	0	0
50-99	83	12	53	-15	0	0
100-149	105	58	60	12	167	17535
150-199	156	153	70	41	49	7644
200-249	205	425	77	66	30	6150
250-299	253	904	[illegible]	91	22	5566
300-349	323	2586	[illegible]	[illegible]	16	5168
350-399	397	770	106	166	12	4764
400-449	445	899	110	193	10	4450
450-499	498	178	115	218	9	4482
500-549	545	66	124	253	8	4360
550-599	596	18	126	280	8	4768
600-649	637	8	136	268	8	5096
650-699	699	5	152	747	8	5592
700-749	744	2	158	276	7	5208

Figures taken from tabulations by Bureau of Dairy Industry of 5564 Virginia cows that were on test for 12 months 1936-1937.

Table No. II presents the frequency distribution of Virginia D.H.I.A. cows according th their annual average butterfat production for 1937. As the table shows there were no returns above feed cost until a cow averaged at least 105 pounds of butterfat. If feed costs represent 50 percent of the total costs of production then a cow would have to have an average annual production of 253 pounds of butterfat before a profit would be realized. To return $2,000 above feed costs, it would require 167 cows of the 105 pound butterfat production level. These 167 cows would place on the market 17535 pounds of butterfat on the market as compared to 4,360 pounds placed on the market by the 8 cows that averaged 545 pounds butterfat production to earn $2,000 above feed costs.

There is an absolute minimum production level below which a dairyman cannot afford to keep a cow. This of course depends upon the price received for the product and the production costs. As shown by Table II it is doubtful whether a dairyman can afford to milk cows producing much less than 300 pounds of butterfat, since feed costs represent from 45 to 50 percent of the total production costs.

TABLE III

Average for Various Associations as Compiled by Bureau of Dairying from 1937 Records Completed by January 1, 1938

Association	No. Herds on Test Dec. 1937	No. Cows on Test Dec. 1937	Av. Production Per Cow Year: Milk	Fat	B-Fat	Av. Feed Cost Per Lb.	Per Cow Year
						$	$
Albemarle	12	497	7499	287	.86		76
Amelia-Prince Edw.	14	487	7051	309	.33		103
Augusta-Rockbridge	12	541	5771	251	.33		82
Augusta #2	6	206	6888	297	.28		83
Botetourt	20	491	7318	286	.35		101
Chesterfield	4	143	6986	244	.27		120
Culpeper	24	1087	7573	311	.30		92
Fairfax #1	21	724	8574	385	.30		106
Fairfax #2	23	702	8031	320	.34		109
Fauquier	26	678	7194	309	.28		88
Fredericksburg	8	255	7314	248	.27		94
Henrico	22	1851	8808	350	.29		103
Loudoun #1	25	1048	7978	348	.30		104
Loudoun #2	25	1057	7538	333	.36		107
Madison	10	353	7377	288	.26		86
Norfolk-Princess Anne	15	747	7089	237	.31		109
Orange	16	675	7412	248	.26		93
Peninsula	8	198	7785	260	.23		99
Prince William	20	732	8030	313	.27		84
Pulaski-Montgomery	14	486	6218	276	.24		87
Roanoke-Franklin	24	1031	8977	305	.26		111
Shenandoah	15	366	7641	259	.29		94
Southampton	8	328	7738	281	.25		75
Washington-Smyth	10	369	8186	290	.24		78
State	390	14638	7722	283	.30		90

Table III presents a brief summary of the Virginia Dairy Herd Improvement Associations for 1937, showing the number of associations, number of herds on test, number of cows on test, the average milk and butterfat production per cow year, and the average feed cost per cow year and per pound of butterfat. High feed costs in some cases do not necessarily indicate low profits since some herds are located in areas of relatively high milk prices where extra or heavy feeding may be justified in certain seasons.

TABLE IV

Virginia Honor Roll Herds in The National Association

Year	No. Herds Av. 400# B.F. above	No. Herds Av. 300# to 399 # B.F.	Total Herds Qualifying for National Dairy Association Diplomas
1926	8	54	62
1927	Records missing		
1928	13	114	127
1929	11	123	134
1930	16	155	171
1931	18	155	173
1932	16	158	174
1933	13	161	174
1934	7	180	187
1935	13	161	184
1936	17	160	177
1937	26	199	225
1938	33	206	239

Each year The National Dairy Association awards Honor Roll certificates to all D.H.I.A. herds averaging at least 300 pounds of butterfat per cow year during the previous year. Table IV shows the number of Virginia herds that qualified since 1926. The records of 206 Honor Roll herds for 1938 surpasses the record of any previous year.

ADVANCED REGISTRY TESTING

As in previous years the dairy extension policy towards Advanced Registry testing in 1938 was to encourage more herd owners to test the entire herd rather than the testing of selected cows. Particular emphasis has been placed on the Herd Improvement Registry division of the Advanced Registry system of testing. In 1938 there were 954 cows tested by the A. R. method, whereas in 1937 there were 938 cows tested. At least 95 percent of the dairymen who practice Advanced Registry testing are members of organized dairy herd improvement associations and consequently secure the service of Advanced Registry testing at as low cost as possible. D.H.I.A. supervisors are fully qualified to conduct A. R. tests and render the service in conjunction with the routine D.H.I.A. work.

The official testing service provides for the recording of every bull having one or more officially tested daughters in Virginia. This pe t of the work was started in 1932 in an effort to have complete and up-to-date production information of all Virginia sires with officially tested daughters. This phase of the work has been particularly valuable in pedigree service work. To date there are 152 Guernsey, 18 Holstein and 25 Jersey sires represented by official record daughters.

Monthly honor roll reports, including all cows that make 60 pounds or more of butterfat during the month, all cows completing records during the month, and timely educational information, were sent to more than 100 interested Virginia dairymen.

The accompanying table presents a statistical summary of the Virginia Advanced Registry during 1938. There were 42 breeders, representing 954 cows, enrolled in the Advanced Registry; of this number 28 herds, representing 367 cows, were in the Herd Improvement Registry.

TABLE V

Advanced Registry Report

November 1, 1937 to October 31, 1938:	Guernsey:	Holstein:	Jersey:	Total
Cows on test dropped before end of test	92	8	7	107
Cows with completed records	128	8	12	148
Cows with incomplete records now on test	203	9	22	334
				587

Average Production

	305 Days			365 Days		
Breed	No.Cows	Milk	Fat	No.Cows	Milk	Fat
Guernsey	2	6685	352	127	11398	552
Holstein	-	-	-	6	14932	552
Jersey	4	7286	447	8	12471	634

H.I.R. Report

Breed	Herds	No.Cows
Guernsey	7	197
Holstein	3	105
Jersey	3	65
	13	367

PROJECT II

DAIRY CATTLE BREEDING AND DAIRY BULL PRODUCTION

There was no marked deviation from the main purpose of this project as outlined in the 1935 program of work. The extension activities were directed mainly towards discovering, estimating and utilizing the desirable heritable traits in Virginia Dairy Herd Improvement Association herds. Special attention was given to the simplification of the methods of project procedure in order to extend the project and to make its results of greater benefit to more dairy farmers.

The original plan of the project, adopted three years previously, was followed closely. The project plan was developed in three distinct phases; its instructional or educational phase through breeding schools; its research and analytical phase through special genetic analyses of herds, preparation and counsel on pedigrees, and the tabulation and critical study of special sire and cow proving data; and its promotional or extension phase through cooperative dairy cattle sales, sire selections, bull association and general Dairy Herd Improvement Association programs. These several project phases were developed during the year with encouraging results.

As this project is developed it becomes more apparent that continued emphasis must be placed upon its instructional phase. Although there are alert dairymen who quickly grasp the principles of dairy cattle breeding and promptly adjust their methods of herd management in accordance with their newer knowledge of genetics, other dairymen are quite conservative and can be influenced to improve their dairy cattle breeding practices only after repeated periods of instruction. As long as new information is provided on dairy cattle breeding, and as long as dairy farmers need to infuse into their herds superior genetic traits of production and physical strength and conformation, there will be a need for specialized instruction in dairy cattle breeding. In view of the limitations of personnel and facilities, it is not likely that this field will soon be over developed in Virginia.

In 1936 the educational phase of this project was developed through 6 one and two-day dairy cattle breeding schools; 6 meetings of the three Virginia dairy breed associations, 8 cooperative dairy bull association meetings; and 2 sectional dairy herd improvement association supervisor's conferences.

The breeding school programs featured the economic need for better dairy cattle breeding methods; the genetic basis for dairy cattle improvement; methods of breeding to eliminate undesirable traits and to concentrate the desirable traits; methods of assembling and analyzing genetic records and also the prevention of reproductive diseases. Without exception, these schools have proved to be the entering wedge for the organized extension program in dairy cattle breeding. They have been a stimulus to the D.H.I.A. enrollment, sire proving, pedigree analyses, bull exchange and cooperative herdbook methods, and the scrutiny of bulls and cows from the standpoint of their proven genetic background.

The dairy cattle breeding meetings were utilized in the determination and promulgation of extension policies for the project. These meetings served to initiate new extension ideas in dairy cattle breeding among leading dairymen, D.H.I.A. supervisors and others whose leadership and influence were needed in furthering the project plan. As new ideas develop these meetings will be used further in building foundation for an ever changing extension program in dairy cattle breeding. In these meetings, both Dr. E. E. Heizer, Ohio State University, and Allen Grisson, National Holstein Association made excellent contributions.

The analytical or research phase of the project has been limited largely to the enrollment of bulls in the State Dairy Bull Registry and the collection of production records. During the year 68 bulls were entered in the Dairy Bull Registry bringing the total to 344 bulls. Among these are one Ayrshire, 226 Guernseys, 116 Holsteins and 101 Jerseys.

In assisting dairymen with the analyses of their herds more than 897 extended pedigrees were prepared on herd sires and brood cows. These pedigrees were divided as follows: 45 pedigrees for Guernseys, Holsteins and Jerseybulls distributed among new dairy farmers in Carroll and Grayson counties; 75 pedigrees of bulls and cows sold in the Virginia Holstein Breeders Sale; 75 pedigrees for bulls and cows sold in the Virginia Jersey Breeders Sale; 77 pedigrees for bulls entered in the Virginia Dairy Bull Registry, and 85 pedigrees prepared for individual farmers who were interested in knowing more about their herd sires. These pedigrees prepared for Bull Registry sires were submitted to the respective bull owners with a critical statement with regard to the pedigree merits, and with recommendations for proving and developing the bulls.

As a further basis for future herd analyses, production records were assembled on 8089 individual cows in 187 Virginia D.H.I.A. herds that have followed more or less consistent breeding programs over a period of years. These records have been invaluable in the preparation of pedigrees and should become progressively more valuable in the breeding analyses of the cooperating herds. Since much of this work is being done by college dairy students the records are providing a concrete basis of instruction for them.

Eighty Virginia Dairy Bull Registry Sires were proved or reproved in 1938. The analysis of this proof data has emphasized the need for greater attention, not only to the extent of the proof supporting each herd sire but also to the environment under which the records are made. The analyses of the proved sire records suggest the need for reproving some sires in order to gain a true picture of the sires' genetic qualities. These sires were proved in D.H.I.A. herds under varying conditions and while the results are stimulating more herds to enroll in the D.H.I.A. nevertheless the natural propensity for dairymen to exploit their proved bulls through the offspring makes closer supervision of the sire proving program more necessary than ever. The proved sire evidence suggests that one should not be too conclusive in his estimate of a proved bull on the strength of the bulls first five record daughters. The reproof is frequently quite contradictory.

In the promotional or extension phase of the project special emphasis was placed upon the distribution of better bulls as well as upon the development of better breeding practices. Two successful registered dairy bull sales were held respectively in Grayson and Carroll counties. These sales were held in a virgin territory in cooperation with the local county agents and vocational agricultural teachers, Carnation Milk Company, Chamber of Commerce and the Virginia Dairy Breed Associations. Mimeographed pedigree catalogues were prepared by the state extension dairymen to serve as a basis for teaching as well as promotion before and after the sales. Thirty-seven good registered dairy bulls were sold in the sales and eight other bulls were sold after the sales. These sales were especially valuable, in view of the cooperating agencies, in promoting better dairy cattle breeding in Southwest Virginia, since considerable publicity and several meetings of dairymen preceded each sale.

The Virginia Holstein Breeders Consignment Sale and the Virginia Jersey Breeders Consignment Sale both sponsored and promoted cooperatively by the breeders and the dairy extension service were responsible for distributing 110 head of carefully selected dairy cows and bulls suitable for breeding purposes. Since the responsibility for assembling the pedigree information for these sales rested with the dairy extension service, much good was accomplished among the breeders and among the buyers in extending the principles of this project. D.H.I.A. records were used extensively and much emphasis was placed upon proved bulls and brood cows in the pedigrees prepared by the dairy extension service for these sales. The fact that cattle well supported by breeding record information sold for higher prices than did those cattle having little record information was evidence that many breeders and others interested in buying breeding cattle are concerned about the kind and amount of record information contained in dairy cattle sales pedigrees. A total of 7 Virginia breeders (4 Holstein, 3 Jersey) participated in these sales and approximately 500 people attended the sales.

The project was extended and promoted through direct personal service to individual dairymen and groups of dairymen. Definite assistance was given to more than 50 dairymen in the selection of breeding cattle. Direct supervision was given to the breeding programs of the six cooperative dairy bull associations affecting the herd improvement on 35 of these cooperating farms. This supervision consisted largely in advising on the exchange of bulls in the development of the breeding plans and in the purchase of new bulls.

The construction of safety bull pens was promoted. More than 30 bull pen blue prints were distributed. Almost all of the D.H.I.A. members are now keeping their bulls in safety pens and many are becoming concerned with bull exchange plans to perpetuate their bulls in service until they are proved. These exchanges are being supervised and developed largely by the county agents and the D.H.I.A. supervisors.

The possibilities for accomplishment through this project are unlimited. The work, however, is limited for want of personnel and facilities for properly promoting it.

TABLE VI

Guernseys — Bulls Proved in the Virginia Dairy Bull Registry, 1938

Owner's Name & Address	Name & Number of Sire Proved	No. Dam-Daughter Comparisons	Av. Milk Prod. per Daughter	Av. B.F. Prod. per Daughter	Av. Days in Record
H.W.Anderson, Sutherland	*Whippernock Foremost 150858	7	6440	359	298
H.W.Anderson, Sutherland	Oaks Farm Ambition 170706	14	7617	372	303
H.W.Anderson, Sutherland	Foremost May King 90308	11	6940	331	288
J.M.Dozier, Lee Hall	Jonado's Lakeman 105744	6	6226	318	294
J.M.Dozier, Lee Hall	Etherston Ultra Duke 84915	17	6941	350	300
A.T.Embrey, Fredericksburg	Wilkins of Hop Yard 190325	8	9428	448	305
A.T.Embrey, Fredericksburg	*Rosebud's Sunbeam of Hop Yard 163182	13	7424	349	299
A. T. Embrey, Fredericksburg	Babe's Jumbo 184974	5	8879	426	303
A. T. Embrey, Fredericksburg	*Lady du Chene's King 190384	10	6756	370	297
A.T.Embrey, Fredericksburg	*Rosebud's Coronation of the Rancho 142316	12	7319	345	298
T.E.Jamison, Buchanan	*Monocacy Explorer 161747	8	7500	334	290
H.C.LeSueur, Bristol	Hillcounsere Vanguard 138168	6	7979	387	299
Mobjack Farm, Mathews	*Dixie of Glencairne 63036	5	7651	373	308
Mobjack Farm, Mathews	*Glencairne Powhatan 89224	13	8089	428	299
Mobjack Farm, Mathews	Dimple Dixie of Mobjack 168288	5	8634	442	301
J.L.Pratt, Fredericksburg	*Langwater Arrogant 133480	11	8896	438	302
J.L.Pratt, Fredericksburg	*Beulah's May Royal 149960	9	8969	416	299
M.D.Rhodes, Broadway	*Langwater Daraley 100891	10	7197	341	277
D.C.Sands, Middleburg	*Atamansit Conqueror 86107	6	7891	398	290
D.C.Sands, Middleburg	*Langwater Dairyman 67295	13	7676	375	293
D.C.Sands, Middleburg	*Langwater Admirer 168236	8	7850	378	301
Mrs.M.N.Keith, Warrenton	Goodstone's Warrior's Actor 151758	6	5546	273	293
F.P.Hickline, Buchanan	*Inverness Jack 210614	5	8094	369	293

*Reproved

Table VI-cont.

Holsteins

Owner's Name & Address	Name & Number of Sire Proved	No. Dam-Dau Comparisons	Av. Milk Prod. per Daughter	Av. B.F. Prod. per Daughter	Av. Days in Record
J.C.Beard, Linville	*VPI Mutual Jewess 374082	15	11437	347	298
J.C.Beard, Linville	*Walkup King Johanna 523104	21	11550	389	300
J.C.Beard, Linville	*Horsepen Korndyke Bonnie 585840	9	9128	303	299
Geo.T.Carr, Charlottesville	Sir Ollie Ormsby Watson 384909	5	9493	329	298
Geo.T.Carr, Charlottesville	*Rosmi Korndyke DeKol Veeman 566051	25	9395	322	298
Geo.T.Carr, Charlottesville	Rosmi Homestead Netherland Segis 583841	6	9254	316	300
Geo.T.Carr, Charlottesville	VPI Bess Burke Gamma Hero 640922	6	10158	362	305
L.J.Crougey, Wytheville	*Grahamholm Piebe Charmette King 517106	24	11805	401	304
Franklin Bull Assn.Boone Mill	*Sir Pauline Denver Piebe Segis 568739	5	10708	351	298
Franklin Bull Assn.Boone Mill	*U.S.S.H.Kerry Colantha Segis 579758	9	8946	280	281
Franklin Bull Assn.Boone Mill	*Rosmi Superb Vale Homestead 489938	7	8812	299	298
T.B.Jamison,Buchanan	*T.O.P. Merrill 630438	21	8417	296	288
T.B.Jamison, Buchanan	*Meadow Farm Artie Ormsby Edward 680179	13	9014	301	285
P.C.Massie, Pulaski	*Rosmi Korndyke Butter Boy Veeman 583111	13	8985	315	297
P.C.Massie, Pulaski	*Segis Duke Trilly Pontiac 558102	5	11346	377	308
F.E.McDonald, Vinton	*Winding Way Model Segis Alertra 510563	7	8472	274	289
Middleton Bros., Herndon	*VPI Ormsby Korndyke 405582	5	12289	435	308
Middleton Bros., Herndon	Finelle Sleepy Eye Pontiac 588808	6	9887	328	299
Minibornya Farm,R/10,Richmond	*Sir Tulip Gem Matador 517845	11	9549	315	301
Chas. Moyer, Mattoax	*VPI Ormsby Buckeye DeKol 617169	38	12024	425	305
Chas. Moyer, Mattoax	*Payne Colantha Johanna 479235	6	12051	442	296
Chas. Moyer, Mattoax	Duke Pontiac Hartog Ormsby 620861	5	12116	465	305
Ravensworth Farm, Burke	*Bellevue Calamo Segis Bess 625978	14	9978	331	296
Hollins College, Hollins	*Rosmi Homestead Vale Netherland 497257	27	9735	319	296
Hollins College, Hollins	*Ambassador Colantha Fibes 417993	5	7250	268	270
T.L.Ross, Montvale	*Skyland DeKol Butter Boy 578973	6	9548	311	288
F.D.Griffith, Brandy	Sir Piebe Segis Veeman 636064	5	7176	229	289
H.A.Spandler, Harrisonburg	*Trebmal Sir Fobes Colantha 647393	11	10399	336	294
J.P.Taylor, Orange	*Pride Ormsby Garben Colantha Count 630839	16	9807	332	302
J.P.Taylor, Orange	*King Ormsby Ideal Beauty 382746	7	11182	373	301
J.P.Taylor, Orange	*Meadow Farm Ormsby Rex Ideal 532636	12	10506	370	291
J.P.Taylor, Orange	*Meadow Farm Pontiac Sonny Boy 570390	12	9819	340	297

Table VI-cont

Holsteins-cont.

Owner's Name & Address	Name & Number of Sire Proved	No. Dam-Dam Comparisons	Av. Milk Prod. per Daughter	Av. B.F. Prod. per Daughter	Av. Days in Record
J.P.Taylor, Orange	*Meadow Farm Sadie Pontiac Joe 482606	10	10846	363	301
Dr.H.H.Trout, Hollins	*Hollins Hiram 495592	7	8800	273	293
Va.Epileptic Colony, Colony	*Rosni Homestead Veeman Lyons 624739	7	8897	288	304
F.S.Walker, Orange	Rosni Veeman 489428	7	11226	391	306

Jerseys

Owner's Name & Address	Name & Number of Sire Proved	No. Dam-Dam Comparisons	Av. Milk Prod. per Daughter	Av. B.F. Prod. per Daughter	Av. Days in Record
F.H.Estes & Sons, Rochelle	Verbena's Boy of Stony Brook 281669	11	7010	368	303
R.E.Brown, Orange	Sophie Barbara's Owl 206568	9	6697	354	290
R.E.Brown, Orange	Phoenix Sophie Owl 244202	10	7211	365	305
Cleveland Dairy Farm, Orange	May Owls Double Tormentor 286954	7	7119	391	299
Cleveland Dairy Farm, Orange	May Owl Owlet Gamboge 244307	6	6909	395	305
Clover Hill Farm, Manassas	*Carry On Owl St. L. Mason 309972	13	7704	409	299
Clover Hill Farm, Manassas	*Carry On St. M. of Clover Hill 210628	12	6984	379	299
Clover Hill Farm, Manassas	*Bertha's Rastus 226915	22	6744	377	299
T.T.Curtis, Orange	Jonquil Prince of Homewood 358894	6	7164	401	298
T.T.Curtis, Orange	Molly's Brampton Lad 300780	6	7210	392	299
E.F.Lohr, Uno	Fay's Lad of Somerset 212915	5	8483	382	298
E.F.Lohr, Uno	*Tiny's Spark of Homewood 246523	10	8404	308	299
E.F.Lohr, Uno	Tid Fenvie Toronto Interest 326153	13	6976	369	302
H.T.Patrick, Rustburg	*Sybil's Gipsy King 3rd 284962	6	6107	289	276
H.T.Patrick, Rustburg	*Pogis Orange Prince 335748	10	6825	322	301
H.T.Patrick, Rustburg	Royal Essex Majesty 341768	7	6642	338	293
Fred A. Spicer, Est, Orange	*Music Master Little Boy Blue 325324	5	6498	309	285
Dr.J.S.Andrews, Orange	*Mary's Pogis of Andrewsia 308442	16	6824	462	299
Montpelier Farm, Montpelier Station	Imp. Simple Interest's Lad 218656	10	7183	380	291

*Reproved

PROJECT XII

COOPERATIVE WORK WITH THE STATE DAIRY ORGANIZATIONS

This project consists of those miscellaneous activities that are conducted in close cooperation with the dairy organizations of the state. This project is designed to develop a larger, better state dairy extension program in which all the state dairy organizations will have some responsibility. The project was successfully developed in 1930 through such cooperating organizations as the Virginia State Dairymen's Association, the Virginia Dairy Products Association, the Virginia Holstein-Friesian Club, the Virginia Jersey Cattle Club, the Virginia Guernsey Breeders' Association, the Virginia Dairy and Food Division, the Virginia Dairy Council, the Virginia State Milk Commission, the Virginia Division of Animal Industry, as well as the various Virginia dairy production and dairy marketing organizations. Although all these agencies were organized as a result of years of extension effort from the agricultural college, they represent all the dairy interests of the state and are forceful cooperating organizations in advancing the dairy programs of the state. It is a significant fact that these agencies are mutually cooperative and the good feeling which exists between them is in itself a dairy extension asset which must be guarded constantly.

In 1930 the extension dairymen actively participated in the work of the above dairy organizations, promoting the several dairy development projects through the organizations and exerting leadership where necessary to advance the best interest of the dairy industry. The results of these efforts have been encouraging. The activities may be summarized briefly as follows:

1. The Virginia State Dairymen's Association: As secretary of this organized group of dairy farmers, R. G. Connelly was able to

marshall the forces of the organization in generous support of the state dairy extension program. In preparing the program and arranging the details for the annual dairymen's convention, held January 20 and 21, 1938 in Alexandria, attention was directed to the dairy extension needs of the state and sentiment was crystalized to furnish a basis for project development. As a means of sounding out dairy farmer opinion and initiating new dairy extension projects this association and its annual convention have proved invaluable.

In contributing to the administration and development of the association, the secretary (Extension Dairyman) kept the business records of the association, arranged for all meetings of the association and its directors, and gave general supervision of the dairy program of the association. During the year the secretary prepared and published in the program of the annual convention the "Second Decade in the History of the Virginia State Dairymen's Association", a continuation of an historic account of the association's activities starting from 1907 when the association was organized. The third decade of this history is now completed and will be published in the 1939 Dairymen's Convention Program.

As an officer in the State Dairymen's Association the extension dairyman, collaborated with the other officers, directors and leading dairymen in the appointment of committeemen, the selection of representatives of the association, the determination of the dairy program of the association and in other activities of the association. In the course of the year the Dairymen's Association financed the D.H.I.A. ear tagging system of the state; financed the purchase of testing equipment for one dairy herd improvement association, provided funds for equipment, diplomas, and other materials needed in developing

the Dairy Bull Registry project, provided stenographic assistance in carrying on the affairs of the association, provided funds for the purchase of educational materials used in teaching 4-H dairy demonstration teams, contributed funds towards sending the V.P.I. dairy student's judging team to the National Dairy Show and greatly assisted the state dairy extension program by making it possible to bring out-of-state speakers into the state at the time of the annual convention. All of these activities contributed to the general advancement of the state dairy extension program.

2. The Virginia Dairy Cattle Breeds Associations: In recent years the Virginia Guernsey Breeders' Association, the Virginia Holstein-Friesian Club; and the Virginia Jersey Cattle Club have become quite active in the promotion of their individual breed interests and in developing the dairy extension program of the state. In each association the dairy extension is well represented and through its representatives has been able to accelerate the state dairy program in these organizations.

R. E. Dickson, Secretary, Virginia Jersey Cattle Club, P. M. Reaves, Secretary, Virginia Holstein-Friesian Club, and H. G. Connelly, as cooperator with the Virginia Guernsey Breeders' Association, worked closely with the breeders in their respective organizations in promoting the production phase of the state dairy program. They assumed the responsibility for organizing and developing the program for the summer field days and winter meetings of their respective breeder organizations. They assisted in the procurement of speakers and in organizing the educational features of their summer and winter programs, assited with herd classification demonstrations at the Jersey field day, helped to select cattle and stage a parish show at the Guernsey field day, and otherwise assisted the officers and breeders to

develop programs of instruction and of lasting value to their individual breed enterprises. It is estimated that 1200 dairy farmers and others attended these meetings.

Special attention is called to the Virginia Holstein Breeders Consignment Sale, the Virginia Jersey Breeders Consignment Sale, both of which were held in October at Orange, Virginia and the Virginia Guernsey Breeders Bull Sale, held at Galax, Virginia, in April and the Virginia Holstein and Jersey Breeders Cooperative Bull Sale held at Hillsville in November. These sales represented breeders' efforts to cooperate in distributing good registered dairy cattle in Virginia. The bulk of the arrangements for these sales were made by R. W. Dickson, P. M. Reaves, and R. G. Connelly of the state dairy extension service. This work included the selection of consignments, the assembling and tabulation of pedigree data, the preparation of catalogue copy and the development of advertising programs, the procurement of auctioneers and pedigree specialists, and in generally supervising the sale. These sales were considered successful, representing the sale of 151 carefully selected purebred dairy cattle, and providing a further opportunity to promote D.H.I.A. testing and the proved sire program.

3. The Virginia Dairy Products Association and the Virginia Dairy Council: C. L. Fleshman worked closely with these organizations giving specialized assistance in dairy problems. Consumer education was promoted as a program through the dairy councils of the state and special assistance was given to the Dairy Products Association in planning their annual convention program. During the course of the year Mr. Fleshman served as recording secretary of Dairy Products Association meetings, prepared special publicity for the association and otherwise assisted the association to keep informed on developments

in the field of dairy manufacturing.

4. The Virginia State Milk Commission: Special assistance was given to the Milk Commission in assembling milk production cost data to furnish a basis for determining the market price for milk in the Roanoke and other Virginia fluid milk markets. Through conferences the Milk Commission and the extension dairymen kept informed on the production and marketing trends in the various milk markets and were able to collaborate in working our market control policies.

5. The Virginia Dairy and Food Division; and Virginia Division of Animal Industry: Several conferences were held with these agencies during the course of the year on problems of milk and cream inspection as well as/market standards also with respect to the educational and regulatory features of the Bang's disease control program. The extension dairymen worked in cooperation with representatives of these agencies through dairy meetings to promote the interests of dairy farmers throughout the state. This work was strictly educational in nature, since it dealt with the instruction of dairy farmers in the problems of disease control and dairy sanitation. Approximately 18 conferences and meetings were held to consider these problems.

PROJECT IV

4-H DAIRY CLUBS

The Virginia 4-H dairy club project is designed and administered to improve rural life through the instruction of farm boys and girls in sound dairy practices; principles of leadership and cooperative action, and the principles of right living so that they may favorably influence conditions in their own homes and local communities. In 1938 two courses of procedure were followed in advancing this project. The first course consisted of such activities that tended to promote interest in the project. The second course was the teaching of dairy subject matter to club members.

Stimulating 4-H Dairy Club Interest

In order to stimulate interest in different dairy projects over the state we visited club members and their projects whenever convenient in our routine field activities. These visits were made to develop more interest and a closer relationship in our 4-H dairy club work.

4-H Dairy Demonstration Phase

The demonstration phase of our 4-H dairy club work created considerable interest among 4-H dairy club members and dairymen in the State, in that the demonstration presented practical information of a disease common to dairymen through the State.

On September 9, 1938 the State 4-H dairy demonstration contest was held at State Prison Farm, State Farm, Virginia. Eight county teams entered in this State contest to compete for a free trip to the National Dairy Show in Columbus, Ohio. The Culpeper County team won first in this contest, which entitled them to represent Virginia in the National 4-H Dairy Demonstration Contest sponsored by the Kraft-phoenix Cheese Corporation and held in conjunction with the National Dairy Show at Columbus, Ohio. The Virginia team won first in the Southern Section of the National contest competing with ten southern teams for this honor. They each received a $250 college scholarship.

The other county demonstration teams entered in this State contest are listed as to their rating, King & Queen county; Appomattox county; Bedford county; Spotsylvania county; Prince George county, and Mecklenburg county. Prince George county second team also entered in this contest and tied placing with Mecklenburg county team.

The treatment for foul foot was the type of demonstration given by each county team developed for the State contest. Various county demonstration teams presented this demonstration at the Institute of Rural Affairs in Blacksburg and at the three summer field days of the Virginia dairy breed associations.

The demonstration was developed around two phases; First, a safe method of throwing and subduing an animal for any treatment involving the rear quarters of the animal; and Second, the correct procedure in bandaging, trimming and treating a hoof infected with this common disease.

4-H Dairy Club Show

Another phase of our 4-H dairy club project was the 4-H dairy club show held in conjunction with the State Fair in Richmond on September 27, 1938. This show assembled dairy club projects of 24 different 4-H dairy club members from five different counties. The quality of the show as good, having 36 animals of three different breeds represented.

As features of the show two additional contests were held, one a fitting contest and the other a showmanship contest. These contests were held to stimulate interest and train 4-H dairy club members in the methods of fitting and showing their animals for show or for sale purposes. Bill Jones, Dumbarton, Virginia won the cow blanket offered for the best fitted animal of the show fitted by the club member. He also won a show halter for showmanship showing his own Guernsey heifer in the ring. Bryon Akwis, Jr., won a show halter for showmanship. He showed his own Holstein heifer in the ring. Edward Canfield won a show halter for showmanship by showing 3 Jersey animals which he entered in 6 different classes.

4-H Dairy Cattle Judging

Another interest promoting phase of the 4-H dairy program was the state 4-H dairy cattle judging contest held in conjunction with the State Fair in Richmond on September 27, 1938. This contest climaxed the summer training and practice period for 4-H dairy club members. During this training period we gave instructions concerning the characteristics of a good dairy animal, with continuous practice in judging dairy cattle to aid their selection of a good dairy cow.

Nine different county teams entered the control to compete for the free trip to the National Dairy Show in Columbus, Ohio. The Prince William county team won first in this contest for the fourth consecutive year. The other county teams entered and in order of their rating in this contest are: Culpeper county; Appomattox county; Fairfax county; Nottoway county, Dinwiddie county, Buckingham county, Prince George county, and Henrico county.

The Prince William county team was entered in the National 4-H Dairy Cattle Judging contest held in conjunction with the National Dairy Show in Columbus, Ohio, to represent Virginia. The Virginia team placed 23 out of 24 teams entered in the contest.

This year the Junior and Senior 4-H Dairy Judging contests were held jointly to develop interest and experience for young 4-H dairy club members and other 4-H club members ineligible to enter in the Senior contest. Six 4-H dairy club members were entered in this Junior contest. Donald Button, Brandy, Virginia, won first in this contest.

The cup offered by the Virginia Holstein-Friesian Club and given to the county team placing first in judging Holstein classes was won by the Fairfax county team. The team winning the cup for three years shall claim the cup permanently. Prince William county and Rockingham county have each won the cup two years. Dinwiddie county, Chesterfield county and Fairfax county have won the cup once each.

The Holstein-Friesian Club of America, American Jersey Cattle Club, American Guernsey Cattle Club, and the Southern States Cooperative cooperated with the State 4-H Dairy contest, contributing ribbons, medals, halters, and other special awards as prizes.

Teaching 4-H Dairy Subject Matter

A 4-H dairy short course was held in Blacksburg during July to present special dairy courses to 4-H dairy club members interested in 4-H dairy cattle judging or 4-H dairy demonstration work. The courses offered for 4-H dairy demonstrations covered the fundamentals of - how to present demonstrations: public speaking, and a practical procedure in staging a demonstration. The course offered for 4-H dairy cattle judging covered the fundamental principles of dairy cattle judging, cattle type scoring, methods of analyzing breed types; selection and comparative judging. Fifty 4-H [illegible] followed both courses during the week.

Subject matter material and suggestions were given to 4-H dairy club members working with the 4-H dairy demonstration and 4-H dairy cattle judging during the summer before the state contests.

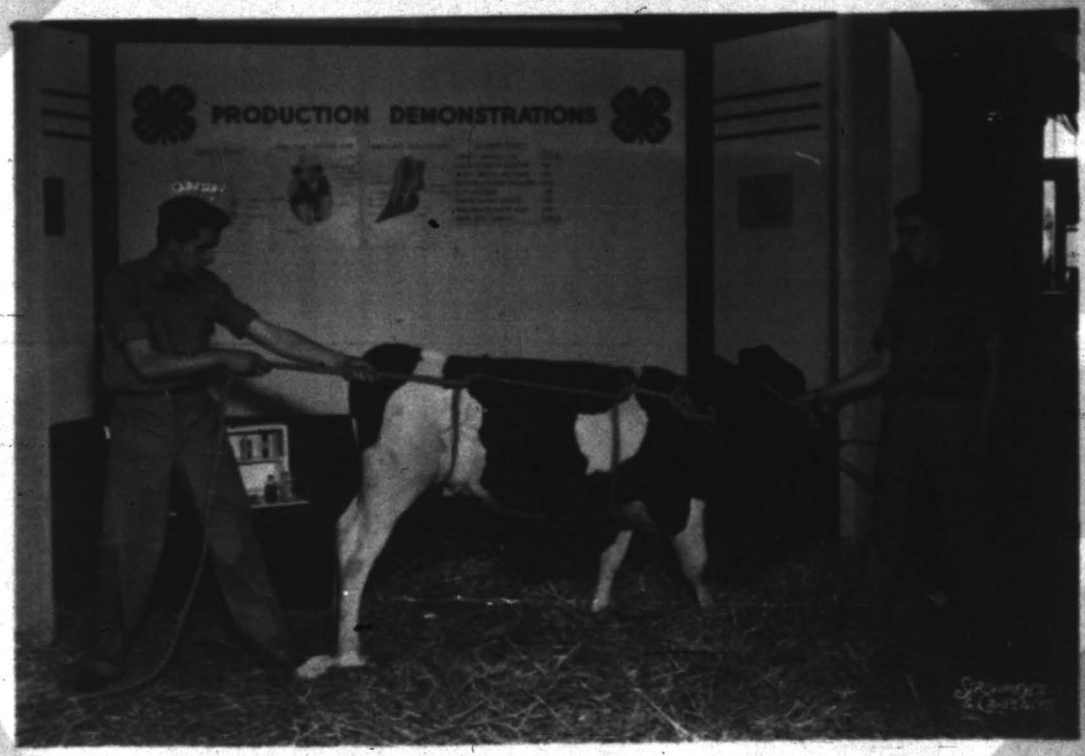
One fitting and showing demonstration was presented in King and Queen county previous to the 4-H dairy club show in Richmond, also several projects were visited and advice given to club members expecting to show at Richmond from King & Queen, and King William counties.

The Enrollment in Virginia 4-H Dairy Club Work

Project Group	Enrollment by Groups: Boys	Girls	Project Completion: By Groups: Boys	Girls	Animals Involved By Groups
Dairy Calf	866	55	236	21	316
Dairy Heifer	78	13	80	11	70
Cow & Calf	96	16	77	12	164
1938 Totals	880	84	363	44	550
1937 "	477	67	371	50	578
1936 "	537	67	310	46	450
1935 "	369	85	289	48	482
1934 "	331	74	278	64	459
1933 "	349	86	277	69	416
1932 "	429	80	361	79	583
1931 "	489	102	301	85	508
1930 "	467	80	304	75	561

(Table VII)

Second phase of 4-H dairy demonstration, showing the animal thrown on left side, shackled properly to prevent injury to the operator and the position in which the operator should take in bandaging and treating the hind hoof.



Showing the correct method of applying a rope to an animal, throwing the animal on the left side without injury to the animal.

PROJECT V

DAIRY MANUFACTURING, DAIRY MARKETING & CONSUMER EDUCATION

This project, dealing with dairy manufacturing, marketing and consumer education, considers the processes involved in converting raw milk and cream into the many finished dairy products characteristic of this area; the marketing of both the raw and manufactured products to the greatest economic advantage of all groups concerned; and the creation of a greater consumer demand through constructive merchandising and well rounded consumer education programs.

Although there is a close correlation, and often an overlapping, in the different lines of work that are necessary for the promotion of this project, for convenience of explanation the project is divided into the following five phases:

1. Merchandising and consumer education
2. Quality improvement
3. Dairy products standardization
4. Plant management and marketing
5. Miscellaneous activities

Merchandising and Consumer Education

Granted the fact that milk and dairy products have the approval and recommendation of leading nutritionists and health associations as being the most complete and nearly perfect food in the human dietary, it has been only a comparatively short time that the dairy industry has realized the importance, or in any cooperative way, endeavored to promulgate a program to bring these pertinent facts before the consuming public.

The dairy council, working on a health education basis in seven Virginia cities, has demonstrated during the last three years that it can get definite results not only from the standpoint of increasing milk consumption in the market, but in acting as a stabilizing influence, it tends to create and maintain good-will between producers and distributors. The dairy council is also a good-will builder for the dairy industry not only from the standpoint of pointing out the nutritive and health value of milk, but through its public relations program, it brings before the public the problems of the dairy industry, especially as to the care and efficiency in the production and handling of milk.

The Dairy Extension Service not only endorses this program, but has taken an active part in the establishment of these local units. During the current year twelve meetings have been attended, including all the annual meetings, and an active part taken in shaping the programs of these units. It is an established custom for all the dairy council workers and the representativesof the Extension Service to hold a joint meeting at the beginning of the winter and summer terms to work up a uniform program outline for the ensuing season. Particular responsibility has been designated by the board of directors of the Virginia State Dairy Council, not only in serving as recording secretary,

but in the close supervision of the work of the nutritional director. Many conferences have been held with the councilworkers in the individual markets in working up the programs. There are other cities in the state that could be conducting these programs to good advantage, but due to complicated market conditions no new units were entirely completed during the year. At the request of interested operators, however, four days were spent in making a preliminary survey in the Covington-Clifton Forge market in determining the feasibility of setting up a branch unit. The organization procured is almost complete and and active organization is expected to start its operation in the near future as a branch of the Virginia State Dairy Council. Influential dairymen and plant operators in the cities of Norfolk, Danville and Lynchburg have also indicated a desire to include dairy council work as a part of their public relations program.

There is a constant increase in the demand for dairy council literature and for the service of the nutritional workers among all types of organized groups. An additional worker was added to the staff of the Richmond Council during the year. Up-to-date educational methods are employed in all phases of the program. The sound movies have been especially popular with the school and parent-teacher programs.

A "Drink More Milk Drive" was sponsored during June and July by the National Association of chain drug stores in cooperation with the National Institute of Distribution and received the full support of Virginias fluid milk industry. Since the annual program is of direct benefit to the dairy industry, the distributor sales organizations and particularly the dairy council workers took an active part in its promotion and in assisting the store managers with contest ideas, consumer literature and exhibit material. Unique sales ideas were originated and put into practice such as the ringing of the familiar cow bell when a milk sale was made and the offer of a dollar bill wrapped in cellophane to the waiter or waitress who suggested milk to the right customer. Large drug and variety stores carried window and back bar exhibits, pennants and posters and probably used them to better advantage than if the program had been inaugurated by the dairy industry itself.

It is difficult to arrive at the present increase in milk sales due to the campaign, but since it came at the peak season in milk production, farmers welcomed the effort of the dairy organizations and store managers in moving this milk. It has also stimulated interest in the store managers and employees in continuing a certain amount of promotional work.

An active part was taken in arranging the dairy council program and exhibits which rightly deserves an important part on the convention program of the Virginia Dairy Products Association.

Dairy Council literature, especially designed for use in school rooms, was provided two years ago by contributions from the Virginia Dairy Products Association and the Virginia State Dairymen's Association for distribution from the Extension office in answer to requests from teachers for supplementary material for teaching health

and food units. Although there was only a limited amount of this material left for distribution during the year, about 80 requests were answered which represented approximately 800 pieces of this type of literature being distributed.

Consumer education is a very important development in Virginia's dairy industry. It is both a health maintenance program for rural and urban consumers and creates financial stability on the part of dairy producers in providing a market for their product. Virginia has often been congratulated by leaders in other states for her constructive public relations program and her friendly producer-distributor relationships.

Quality Improvement

The production of quality milk and manufactured dairy products has always maintained an important place on the Dairy Extension program. Because of the importance of this project to the dairy industry due to higher quality products being offered to the public, and its subsequent effect upon the health of consumers, this project has received considerable attention throughout the year.

Quality maintenance from the standpoint of milk produced and processed for bottling purposes, is controlled very satisfactorily by municipal and state ordinances and regulations which eliminates the necessity for an organized project of this type. There has been an increase in the requests, however, for quality tests and particularly for information on the control of udder diseases. The new interest in homogenized milk has presented new problems in quality control because of sediment in bottles due to unclarified milk that is especially high in cell count. Oxidized flavors, due to metal contamination of susceptible milk, are becoming more prevalent especially in the markets where low bacterial count milk is being produced. Very few plant operators are familiar with these new problems and a detailed explanation is necessary where the problems present themselves. Some of these problems have been handled by correspondence and others by private conferences.

The quality problem receiving most attention was a project with the Valley of Virginia Cooperative Milk Producers Association. This plant handles both bottled milk and milk used for manufacturing purposes, but is also in a position to furnish Grade "A" milk to other markets in times of milk shortage. In order to strengthen its position in being able to supply Grade "A" milk to other markets and to offer its producers a premium price for producing such milk, the organization made arrangements to assist them in preparing for this special market outlet. As a result 25 producers have met the state ordinance requirement for producing Grade "A" milk and 10 others will have permits by January 1, 1939. Other producers are interested and will be offered the same opportunity.

The Extension Service assisted in this quality improvement program by making a survey of the farm conditions and furnished recommendations as to the improvements that would be necessary in order to get the permits. In cooperation with the Agricultural Engineering Department, barn and milk house plans were furnished to the producers.

Another part of the program was the problem of laboratory control in the plant. Instruction was given in training the laboratory technician in making sediment and methylene blue tests on the milk coming into the plant. A system was also worked out to report these results back to the producers thereby assisting them in maintaining quality production. Follow-up work was done on this problem from time to time throughout the year.

Routine laboratory procedure was also worked out and put into practice in the Evergreen Dairy at Covington with one of the former short course students in charge. The tests included milk, cream and ice cream testing and lactometer reading.

Judging from requests received there is an increased interest in quality manufacture of farm made butter. Numerous requests supplemented by bulletins have been answered by correspondence relative to difficulties encountered. One buttermaking demonstration was given before the home economics class at V.P.I. A discussion of producing quality cream and three buttermaking demonstrations were given before home economic clubs in cooperation with the home demonstration agent in Campbell county.

The quality ice cream contest, a feature of the annual convention of the Virginia Dairy Products Association, and entirely under the supervision of the Extension Division, provides an excellent medium for pointing out the defects of the contestant's ice cream as well as paving the way for follow-up work in quality standards. Manufacturers throughout the state submit samples for the contest to compete on a quality basis on the points of flavor, body and texture, color and package. Two out-of-state judges were secured to score the samples. Defects are often brought out during this rigid examination by the judges that are often overlooked by the manufacturers. These defects are discussed with them after the convention, the cause determined if possible, and suggestions made for improvement.

The quality standards on milk and other dairy products were stepped up somewhat by action of the General Assembly during its last session. Grade "AA" standards for milk were promulgated, but so far have only been used in two markets. A sanitary pressure on the importance of milk and cream and ice cream mix from other states in providing interest in raising the standards of similar products within the state. Several recommendations on meeting bacterial standards and sanitary practices to meet these regulations have been discussed with plant operators.

The quality cream production program has been on the wane since 1935 at which time cream buyers felt it necessary to dispense with price differentials because of failure of some of the buyers to live up to thegrading agreement. Because of this situation there is very little that can be offered a producer in the way of immediate monetary gains for producing high quality cream. As a result, no producer meetings were held although instruction was given to employees on the receiving platform of five creameries on cream grading, and advice given that would enable them to instruct their producers on methods of caring for cream.

literature and production information has been furnished to a few of the especially interested plant operators for distribution to their patrons.

Problems of plant sanitation and quality standards were frequently discussed with representatives of the Dairy and Food Division. Although the duties of these representatives are purely regulatory, it is often necessary for them to make constructive suggestions regarding quality improvement in order to get the desired changes made promptly.

Many of the problems described under "Plant Management" and "Dairy Products Standardization" of this project deal with quality problems on the basis of improving the quality of dairy products in the plant.

Dairy Products Standardization

The dairy products standardization phase of the manufacturing project is a part of the educational program as well as a personal service to the plant operators and farmers. It is carried out in cooperation with the V.P.I. Dairy Department and the V.P.I. Bacteriology Department. Samples of butter, ice cream, cream, milk and condensed milk are sent in by the plants for analysis, and scoring, in the case of butter. The bacterial, yeast and mold counts are made by the Bacteriology Department.

The standardization phase provides for a definite service. First, it allows the plant operator to check his own analytical results against those made by the Extension Service. Second, it provides for those plants that have no laboratories to be able to obtain frequent analyses on their products. Third, it provides for the instruction of plant operators in analytical methods for determining the composition of dairy products. This standardization provides a means of follow-up work of laboratory trained men who have been given instruction at V.P.I., either as long or short time students, and technicians who have been given special training in their own laboratories.

Several of the large fluid milk companies have installed adequate laboratory equipment for making their own laboratory tests. Most of the small plants and producer-distributors rely on the tests of the health departments and the Dairy and Food Division as being sufficient to give them the information they need. Therefore, under the system of rigid sanitary inspection there are very few requests for analytical information on fluid milk. The few samples that did come in were for reasons other than for analysis, such as abnormal fermentation, milk from diseased udders or abnormal flavors.

Most of the ice cream samples were sent in by the plant operators for the purpose of checking the plant laboratory on its results and in checking the production manager on calculating and assembling the mix. In most cases these tests provided for a future service in recommending changes in the composition of the mix. In most cases these recommendations were put into practice with the result that the finished ice cream was greatly improved in quality.

A majority of the samples tested during the time covered by this report were butter samples on which a variety of tests were made. Due to a difference in tests made on samples of butter by different plants and commercial laboratories, the Extension Service started a project last year to provide the service of establishing the accuracy of these tests. Tests were made in duplicate in the V.P.I. laboratory by the Kohman method, which is the usual plant test, and the samples checked by the Mojonnier test. A tolerance was set up to take care of the variation and recommended to the creamery operators. Five churnings of butter, made by a small group of plants were "tagged" last year by Federal authorities for reworking, whereas the plants have not had any trouble of this kind during the current year. At the same time each of the plants is maintaining a very good average plant overrun. The usual cost for reworking and checking a churning of butter that has been "tagged" is from $200 to $500.

In addition to the complete analysis on the butter samples, there has been an increased interest in the yeast and mold counts. This is an important phase of the work because of the recent activity of the Federal Food and Drug Administration regarding mold in cream and butter and the perfection of a test that will detect mold filaments. Practically all the samples analyzed have shown an unusually high yeast and mold count which indicates recontamination after the cream is pasteurized. Definite sanitary procedures are being recommended to these plants in order to correct this condition. Since this phase of the project was not started until late in the year, it will not be possible to give the results in this report.

Sixty-two samples of dairy products were analyzed under this phase of the project in the V.P.I. laboratory under Extension Service supervision during the current year. Fifty-four of these samples were butter on which a complete analysis was determined in duplicate by the Kohman method, and on 30 of these samples an additional check was made by the Mojonnier test. Yeast and mold counts were reported on 18 of these samples. Eighteen of these samples were ice cream that were analyzed for butterfat and total solids content all by the Mojonnier method. The remaining samples were milk and sour cream samples which were analyzed for butterfat and abnormal fermentations.

Plant Management and Marketing

The plant management and marketing phase of this project is very diversified in nature. It has many features of being a special service to individual plant operators and farm dairies, but has proved to be a popular service as well as a phase of work showing definite results. The work is important because it increases efficiency in plant operation and dairy stabilization throughout the production area. An efficiently operated plant with a creditable merchandising program is in a much better position to return a higher percentage of the consumer's dollar to the farmer than a plant where this program is lacking.

Under this phase of the project is included advice on marketing and merchandising, building plans, technical and practical advice on processing problems and problems dealing with plant operation and general management. Blue prints for new buildings and remodeling plans for old buildings were furnished upon request for city and farm plants. Through the cooperation of the Agricultural Engineering Department the Dairy Extension Service has on hand standard building plans approved by the Dairy and Food Division that can be supplied immediately upon request. It is necessary, however, to draw new plans for special jobs.

Plant problems consisted in general of selection and arrangement of machinery, problems in buttermaking, ice cream making, milk processing and market milk production and distribution. In some cases problems were worked out in conference with the plant manager or his production manager or both, while in other instances it took from one to several days work with complete supervision of all processes involved.

The following table gives a portion of the important specific services rendered to plants and farm dairies throughout the state during thecourrent year. It is difficult to estimate the value of this service to the plants concerned, but the service would be very expensive if it were available through commercial agencies. Since it is not available in a majority of the cases, the plant and farm operators are very desirous of getting this assistance from the Dairy Extension Service.

An illustration of this type of assistance was an emergency problem at Norfolk Avenue Dairy, Lynchburg. The owner is a farmer producing and distributing pasteurized milk. Immediately following the installation of new plant equipment the customers began to complain of a serious "off flavor" in the milk. Threatened with losing practically all of his customers, the operator got in touch with the company representatives who sold the equipment. These men were unable to locate the trouble and immediately contacted the Extension Service. It was readily apparent that the milk was being oxidized but tests had to be made to determine the source of contamination. It was found to be coming from the sanitary pipe lines which was a very unusual case because the type that was in the plant at the time is used extensively throughout the dairy industry. Installation of a different type of sanitary pipe corrected the trouble.

Another illustration of this type of direct assistance was the problem regarding the manufacture of butter at Wood's-Petersburg Dairy, Petersburg. The plant was suffereing a severe butterfat loss, and due to a poor system of records, the management was unable to locate the trouble. Four days were spent in the plant at which time composition control tests were demonstrated and put into practice, and a creamery record system installed. It was also found that the buttermaker and plant superintendent were working against each other as a result of previous labor union activities. These matters were arbitrated somewhat and the records set up in such a way that responsibility could be determined more accurately.

Another illustration of plant service was an ice cream problem at Birchard Dairy, Norfolk. During the heavy production season the management was faced with consumer criticism due to a very crumbly bodied ice cream. A laboratory analysis of the ice cream and a survey of the production problems revealed that the mix was unbalanced in composition and that the stabilizer was not having any effect due to the way it was being added. The management readily accepted the suggestions which corrected the trouble immediately.

Four days were spent on general plant management problems at Fauquier Creamery, Marshall. This plant makes approximately 200,000 pounds of butter a year and was having trouble in maintaining plant overrun as well as maintaining a uniform product. During these four days 4000 pounds of butter were made under Extension Service supervision. The management was very appreciative of the suggestions and has used them to improve the quality of his product as well as to increase efficiency in the plant operations.

Through advice on refrigeration problems, the Shanklin Farms Dairy, Marion, was able to convert the refrigeration system from a high pressure to a low pressure system and still use the same expansion coils. The job worked perfectly satisfactory and saved the operator a considerable outlay of money.

During the year 34 individual farms were visited and 55 recommendations were made. One hundred and sixteen dairy plant visits were made and 286 recommendations were made for improvement.

TABLE VIII

Specialized Work In Plants and Farm Dairies That Relates to Plant Management

Month	Name of Plant or Farm	County	Nature of Work
December	Norfolk Avenue Dairy	Campbell	Determined source of oxidized flavor in milk
January	Monticello Dairy	Albemarle	Demonstrating use of Babcock Tester
"	Pine Grove Dairy	Norfolk	Worked up ice cream formula
March	Valley of Virginia Co-op Milk Producers	Rockingham	Butter standardization problems
"	Cold Spring Company	Roanoke	Problem of milk utilization
"	Carlysle's Dairy	Bedford	Problems in making ice cream
"	Farmville Creamery	Prince Edward	Problems in processing cream for buttermaking
April	Westover Dairy	Campbell	Cottage cheese making demonstration
May	Carat Bros. Dairy	Roanoke	Butter standardization problem
"	Woods-Petersburg Dairy	Dinwiddie	Butter standardization problem
"	Roanoke Butter & Cheese	Roanoke	Butter standardization problem
June	Roanoke Butter & Cheese	Roanoke	Sanitation problems and butter standardization
July	V.P.I. Creamery	Montgomery	Installation of dairy equipment
August	Hollybrook Dairy	Fredericksburg	Worked up building plans for proposed plant
"	Quality Dairy	Campbell	Plans for remodeling plant
"	Burly Dawn Dairy	Augusta	Arranging and setting up equipment
"	Rosedale Dairy	Norfolk	Worked up new ice cream formulas
"	Birchard Dairy	Norfolk	New ice cream formulas to correct crumbly ice cream
September	Pasquier Creamery	Pasquier	Buttermaking demonstration (4000 lbs.)
"	Chantlin Farms	Smyth	Refrigeration and buttermaking
"	Dr. Ford K. Lucas	Montgomery	Recommended equipment and finished plans for milk house
October	Danville Dairy	Pittsylvania	Ice cream and butter problems
November	Burly Dawn Dairy	Augusta	Making commercial buttermilk
"	Evergreen Dairy	Alleghany	Problems on ice cream manufacture

MISCELLANEOUS ACTIVITIES

R. G. Connelly

Dairy Farmer's Short Course

Delivered four addresses on dairy cattle feeding before the annual Dairy Farmers Short Course at the agricultural college. Thirty five dairy farmers and dairy herd improvement supervisors-short course students attended these sessions.

The American Dairy Science Association

As secretary of the Extension Section of the American Dairy Science Association records were kept of the various meetings and considerable correspondence was carried on in the development of the program for the annual meeting which was held in June at Ohio State University in Columbus, Ohio. During this meeting conferences were held with dairy extension workers from other states to consider ways of improving present method of dairy extension.

In February a special paper was prepared on the subject of dairy cattle breeding and was delivered before the annual meeting of the Southern Section of the American Dairy Science Association at Atlanta, Georgia.

The State Land Use Planning Conference

Ten days were spent in cooperation with other Virginia agricultural extension agents in developing local agricultural extension programs. These meetings treated the problems affecting agriculture and resulted in specific recommendations for long time extension programs. Meetings were held at Staunton, Culpeper, Richmond, Farmville, Danville, Petersburg and Marion.

The Institute of Rural Affairs

Three days were spent in July in activities associated with the annual Institute of Rural Affairs. Approximately 15 conferences were held with dairymen during the institute.

Work With Vocational Agricultural Students

Gave special instruction in dairy cattle judging to more than 300 vocational agricultural students at Blacksburg, New London, and Victoria. Entertained a tour of 100 Future Farmers and their parents from Carroll county on a visit to the V.P.I. dairy in May. This tour was a feature of the general dairy development program in Carroll and Grayson counties.

National 4-H Dairy Demonstration Contest

Spent four days at the National Dairy Show in Columbus, Ohio, serving as cooperating judge in the National 4-H Dairy Demonstration Contest. This contest was the largest and hardest fought contest ever held at the National Dairy Show.

Office Conferences

About ten percent of the time spent in the offices was devoted to program planning conferences and conferences with dairymen and others on subject matter.

MISCELLANEOUS ACTIVITIES

Delmar J. Young

Dairy Cattle Sales

Assisted other members of the staff extending pedigrees for the Virginia State Jersey Sale and the combination Holstein and Jersey bull sale in Galax. The pedigrees included three generation ancestory and all production records available on each animal.

Dairy Breed Associations

Assistance was given the three breed associations in the state with their program for their supper-fieldfield days held during the summer. At these meetings various 4-H dairy demonstration teams appeared on the program presenting "The Treatment of Foulfoot". This demonstration created considerable interest and comment among the dairymen.

Fairs

Supervised the 4-H club show and judging contest at the State Fair in Richmond. Also judged dairy cattle at the Rockingham 4-H County Fair in Rockingham county.

Office

Time in the office was divided into the following phases; organizing subject matter material, correspondence, conferences with fellow extension workers, testers, and dairymen, dairy herd improvement association record work, extending pedigrees for Bull Registry project. Assembling records for herd analysis, and general office assistance.

Out of State Meetings

Attended the extension section meetings of the Annual American Dairy Science Association at Columbus, Ohio, in June. At these meetings extension problems and extension methods were discussed. Also observed several exhibits illustrating methods of presenting nutritional data, breed records, program records, dairy farm management, and advertising by the Dairy Council.

Serveddasrecord clerk for the National 4-H Dairy Cattle Judging Contest held in conjunction with the National Dairy Show in Columbus, Ohio. Attended the coaches meeting of 4-H dairy club teams and also the extension meeting of extension workers held during the show, assisted with 4-H Dairy Demonstrations, and attended the 4-H Club banquets.

Various State Meetings

Attended three program planning conferences held in November in three production areas to become acquainted with fellow extension workers and problems involved in these areas.

Addressed two meetings of Pet Milk Company producers on "Winter Feeding of Dairy Cattle", also visited several dairymen in that area.

Attended five meetings of the Institute of Rural Affairs.

MISCELLANEOUS ACTIVITIES

R. W. Dickson

Dairymen's Convention

Three days were devoted to cooperative work with officers of The Virginia State Dairymen's Association in preparing parts of the convention program. All sires proved or reproved during 1938 and all herds averaging 300 pounds of more of butterfat for the testing year were tabulated for the program. Two days were spent at the convention in attending general meetings and the Jersey breed luncheon meeting. Considerable time at the convention was devoted to conferences with D.H.I.A. supervisors and D.H.I.A. members.

Cow Testers Short Course

On orrer to have available in Virginia a supply of highly trained candidates for D.H.I.A. supervisor positions, The Dairy Department of The Virginia Polytechnic Institute, offers a four to six week cow tester's short course. Seven days were devoted to cooperative work with the resident teaching staff in teaching dairy herd improvement association record work to members of the short course.

Office Calls

Ten percent of the time spent in the office was devoted to personal calls from D.H.I.A. supervisors, county agents, dairymen and others interested in discussing specific problems related to dairying. There were at least 100 calls during the year.

Publicity

Monthly news letters, including current dairy herd improvement association reports and timely educational information were sent to 700 Virginia dairymen. At least 8,400 news letters were mailed to dairymen of Virginia during the year.

Advanced Registry monthly Honor Roll reports were sent to 100 dairymen, part of whom have dairy cows on Advanced Registry test.

One and one-half days were spent in preparing and delivering a radio talk.

Virginia Dairy Breeds Associations

Each year considerable time is devoted to cooperative work with officers of the three breed associations, Holstein, Guernsey, and Jersey. Twenty-two days were required during the year in work of

the following nature: Guernsey bull sale at Galax. Selecting Jersey cattle for state sale, preparing pedigrees for state Jersey sale, acting as secretary-treasurer of the Virginia Jersey Breeders Association and attending special breed meetings. Considerable time was devoted to routine Jersey cattle club correspondence relating to specific breed activities.

Pedigree Service

Not less than 10 days were devoted to preparing extended pedigrees of dairy cattle in Virginia. This is a regular routine service that is rendered dairymen. Accompanying each pedigree is a letter criticising its merits and demerits. Cooperative work with other members of the department in preparing extended pedigrees of all D.H.I.A. sires that entered service for the first time in 1938, required considerable time and attention.

State Meetings

Five days were devoted in attending program planning meetings and meetings of The Institute of Rural Affairs. Two program planning meetings were attended, one at Blytheville and the other at Martinsville. The time devoted to the Institute of Rural Affairs was spent in attending the various meetings, and conference meetings with county agents and dairymen.

Judging

Each year the dairy extension department cooperates as much as possible with the various fair associations of the state in furnishing a judge for the dairy exhibits. During the past year time devoted to this type of work has been limited because of pressing needs of work and attention in other types of work. Dairy exhibits were judged at the following fairs during 1938; Washington County Fair; Honaker Community Fair; Rural Retreat Community Fair, Jersey 4-H Club Exhibit at The State Fair, The Chesterfield County Fair, and The Warsaw Fair.

Bull Association Work

Eight days during 1938 were devoted to work with Virginia dairy bull associations. The work involved required the inspecting and inventorying of herds in the bull associations, and attending their annual meetings

Feeding Schools

Three days were devoted to cooperative work with other members of the dairy extension staff in conducting feeding schools. Topics discussed at such schools were as follows: Economical Roughage Feeding; Economical Grain Feeding; Growing and Harvesting Quality Roughages, The Importance of Silages for Dairy Cattle; Care in Purchasing Dairy Feeds; Balancing Dairy Rations to Needs of Dairy Cattle, and The Value of Pasture in the Economical Feeding of Dairy Cattle.

MISCELLANEOUS ACTIVITIES

P. M. Reaves

Dairy Meetings (Subject matter meetings)

Subject matter meetings including dairy cattle feeding and breeding schools were held in Roanoke, Augusta and Frederick counties, the last two being two-day meetings. The purpose was to conduct discussions on dairy practices suitable to those areas.

State Dairy Organizations

Some time was given in assisting with arranging the program of the State Dairymen's Association convention at Alexandria. Service was rendered as secretary of the breed's relations committee of this organization. The dairy products association convention was attended.

The Roanoke Cooperative Milk Producers Association annual meeting was attended and a part taken on the program. The Richmond Cooperative Milk Producers tour was attended. Several conferences were held with the State Milk Commission, the state veterinarian, and the Dairy & Food Division.

Assistance was given in the holding of the Gelax combination bull sale, the Jersey field day, and the Guernsey field day.

As secretary of the State Holstein Club, considerable time was spent in cooperating with breeders in the various activities of the club. The annual winter meeting and the directors meeting were arranged for in conjunction with the state dairymen's association. Several conferences and committee meetings were held to arrange the summer field day. This was held at Rosmi Farm, Orange with an educational program arranged including a Holstein breeding demonstration, there was an attendance of about 200 people.

The Club sponsored a consignment sale again and much assistance was given in carrying out this project. Cooperation was given the sales committee in making plans for the sale. Twenty-five herds were visited in the selection of the cattle. Pedigree data including D.H.I.A. production records of cows and D.H.I.A. dam-daughter comparison figures were secured from the extension files and from the consignor's herd books. The completed pedigrees and other catalog information were prepared. Fifty animals were sold by the consignors for an average of just over two hundred dollars per head. This attested to the high quality of cattle, of demonstrated producing ability and inheritance from these Virginia dairy herds.

Herd Analysis, Bull Proving and D.H.I.A. Records

Dairy herd improvement association records and identifications were assembled in cooperation with the testers. These records were used for bull proving information and for pedigree information. In one herd a herd analysis study was made.

Herd Studies and Registration

In six instances special herd studies were made, followed by recommendations. Three of these included assistance in the registration of purebred cattle.

4-H Short Course - FFA Judging - Judging at Fairs

The week of the 4-H short course in Blacksburg was largely devoted to instruction work in 4-H dairy classes. Some assistance was given in 4-H dairy judging training in the state. Assistance was given in FFA dairy contests, both at the rally and in sectional contests. Guernsey and Holstein exhibits were judged at a Fairfax County Fair.

Out of State Meetings

The American Dairy Science Association meeting was attended. This included a four day meeting divided into sections for extension, production, instruction and genera. Committee service was rendered as a member of the inter-collegiate dairy judging rules committee. In conjunction with the national dairy show, meetings of the Guernsey breeders and of the Holstein breeders were attended.

Farmers Institute

Dairy cattle exhibits were arranged for the Farmers Institute. As a part of the dairy section program, a demonstration of a breeding program was shown using the college herds. Many conferences were held with dairymen and others during this three day meeting.

Conferences

The annual extension conference was attended, as well as several other extension meetings. Throughout the year much time was spent with men coming to the office for conferences regarding thier specific problems. There were 82 such conferences with dairymen, commercial men, dairy inspectors, fieldmen for breed and dairy organizations and others who called the this purpose. One day was spent with representatives of the Bureau of Dairying, going over their new identification and herd record systems.

Correspondence - Publicity - Radio

Correspondence was a means of answering inquiries of dairymen and others, furnishing specific information requested by them. This included an especially large number of dairy feed formulas for dairymen and feed men. A great deal of follow-up work from meetings and visits was done by correspondence, 369 letters and 246 circular letters were written, 39 bulletins were sent out. Ten publicity articles on dairying were prepared for dairy papers, breed papers, other agricultural papers and newspapers. Eight radio talks were prepared, dealing with timely topics for dairymen.

MISCELLANEOUS ACTIVITIES

C. L. Fleshman

State Dairy Associations

The Virginia Dairy Products Association has, in recent years, developed into a strong dairy organization from an educational, as well as, a legislative standpoint. Through its activities it has an important bearing on all important dairy matters within the state and because of this, it provides opportunities for organized work from the extension division standpoint. As publicity agent and ex-officio member of the organization, all activities of general interest were reported to the leading dairy journals. This organized publicity program, having been built up over a three year period, has resulted in a much wider out-of-state acquaintance with Virginia's dairy industry. Important news items were also prepared and submitted to the local newspapers and the Associated Press before and during the annual convention.

A considerable amount of time was allotted to the association's annual convention, which was held in Alexandria, in serving as a member of the program committee, in securing speakers for the program and supervising the educational ice cream contest which is an annual feature of the program.

A few of the activities of the Virginia State Dairyman's Association were participated in as secretary of the Markets and Standards Committee and in discussing legislative matters.

Dairy Manufacturers Short Course

Most of the month of February was devoted to instruction work in the butter and ice cream short course at the College. These courses are designed to give up-to-date information in production management to men who have had practical experience in dairy manufacturing plants, although inexperienced men may attend. This type of instruction brings about a close relationship with the manufacturing plants, since it provides for future contact with these students. It is also a medium through which men can be trained for more responsible positions in the plants. Twelve students attended these courses.

4-H Club - F.F.A. Rally - Dairy Day

One day was allotted to 4-H club activities during the annual short course in supervising the milk judging contest. A similar contest was supervised during the F.F.A. Rally, and another day was spent in coaching the selected team that participated in the national contest at Kansas City. One day was devoted to the activities of V.P.I. Dairy Day in assisting with the details of the program and in writing publicity for the dairy trade journals.

Special Meetings Attended

The week of October 16 was spent in attending the conventions of the International Association of Milk Dealers, The International Association of Ice Cream Manufacturers and the Dairy Industries Exposition in Cleveland, Ohio. The Exposition provided an opportunity to see the latest types of machinery used in the industry as well as an opportunity to discuss the merits of each piece of equipment with the manufacturers. The conventions provided an opportunity to discuss problems with members of other agricultural colleges as well as men in the industry. The general sessions and sectional meetings covered practically every phase of the milk and ice cream fields.

Two days were spent in attendance of the Ice Cream Merchandising Short Course, Washington, D. C. This regional meeting was designed to give instruction in educating the dealer in sales methods and to give the consuming public a greater appreciation of the value of ice cream. It was also instructive from the standpoint of work with the ice cream manufacturers. Forty-nine other special meetings of varying types were attended in various places throughout the state during the period covered by this report.

Cooperation with Other Dairy Organizations

Conferences were held from time to time with representatives of the State Milk Commission, the Dairy and Food Division, and the different dairy council organizations as a means of coordinating their programs with those of the extension division. Each of these organizations, together with the extension service, has worked in close harmony with each other throughout the current year to the mutual benefit of each.

Publicity

A regular news service, of interest to out-of-state, as well as Virginia readers, was maintained throughout the year with 10 of the leading dairy journals in furnishing publicity that originated from the V.P.I. Dairy Department, the extension division and other state dairy agencies and organizations.

Other forms of publicity used were circular letters, bulletins, radio talks, news items for city and county newspapers and general correspondence.

Office Conferences

About 5 percent of the office time was given to office conferences with dairymen, plant operators, salesmen and representatives of state dairy organizations. These visitors were either seeking dairy information or assisting with the organization of dairy educational programs.

THE 1939 DAIRY OUTLOOK FOR VIRGINIA

A- The General Dairy Situation, November 1938

The immediate dairy outlook is uncertain. With an unprecidented supply of dairy products now in storage, both production and consumption conditions favor a further increase of dairy product surpluses. Abundant supplies of cheap feed and relatively favorable dairy prices have encouraged more intensive feeding stimulating the rate of production. Milk production this winter is expected to be heavier than last winter and will probably represent the largest winter production on record for the state.

The decline in Virginia milk cow numbers stopped about a year ago. Less cows are now being culled from the herds; market prices for good cows are increasing and more than enough calves and heifers are being raised to take care of the normal herd replacement needs in 1939 and 1940. Farmers are preparing to increase their dairy operations to such an extent so that without parallel improvement in general business conditions and consumer buying power continued dairy surplus conditions are in prospect.

Although the immediate dairy outlook may incite caution, the longtime perspective for Virginia dairying appears encouraging. The gradual development of the Virginia Land Use Planning Program should more nearly assure cooperating farmers of an adequate supply of low cost home-raised feeds each year. With better land utilization, and cheaper feeds, there is some prospect of greater stabilization of production throughout the year and a wider dairy diversification to supply more of the dairy product needs of the state.

The Bang's disease eradication program has progressed to a point where cattle losses from this cause have been greatly diminished. With dependable supplies of feeds and healthy, prolific herds, the raising of saleable herd replacements is a promising dairy diversification for further development. The breeding up of superior herd replacements for stepping up the productive efficiency of established Virginia dairy herds is even now captivating the attention of some far sighted dairy farmers.

The general influx of new industries with corresponding increases in the population of wage earning consumers and the anticipated improvement in general business conditions for the next few years suggests a possible need for gradual dairy expansion in some parts of Virginia.

The continued operation of the National Dairy [redacted] Association should decrease the depression effects of temporary dairy surpluses and create greater security and confidence in all phases of dairying. Likewise the proper enforcement of the Virginia Milk and Cream Act should stabilize both fluid milk prices and the methods of marketing in the fluid milk markets of the state. It should be observed, however, that even though there are market stabilizing agencies functioning in Virginia, one may reasonably expect that the favorable producing conditions which gradually created record dairy surpluses during the past

two years, will not continue uninteruptedly and indefinitely in the future.

B - Dairy Production Conditions

Milk Cow Numbers: The decline in milk cow numbers is checked and rather rapid increase in dairy cattle is in prospect for the next few years. There will be about 5,100,000 dairy heifers in the country January 1, 1939, representing 30.3 heifers per 100 cows or 1 replacement for each 4.9 cows, as compared to an average of 19.8 heifers per 100 cows for the 15 year period preceding 1935. A national survey last June indicated more spring-born heifer calves being saved in the relition to the number of cows than in any year since 1931. Since the rate of culling is retarded and cow prices are advancing, last June's report suggests that approximately 5,400,000 heifers will be added to the milking herds of the country in 1940; equal to about 21 percent of the cows at that time. This will probably be more heifers than will be needed for normal replacements. The increase in Virginia milk cow numbers will probably correspond to the cow increases elsewhere in the country.

The Feed Situation: The feed grain supplies per animal unit for the 1938-39 feeding season are the largest in more than 15 years. The feed grain acreage was reduced in 1938, but the yields per acre were high and the total production for the country was up to average. A reduction in livestock numbers also contributed to the increased feed supply.

Due to reduced cottonseed production, there is less protein by-product feeds on hand than in 1937. In relation to animal units, however, the supply is larger than in any of the ten years prior to 1934. The prevelance of good pastures, and the largest production of hay in ten years also contributes to the large supplies of feed grains. Since butterfat has a relatively high grain purchasing power, very likely greater quantities of low priced grains will be fed throughout the current winter. It is also evident that more Virginia dairy farmers are placing greater dependence upon improved pastures, hay, corn silage, and also molasses-hay silage as sources of low cost feed nutrients.

The Milk Production Situation: Milk production per cow continued at record or near record levels during the past summer and fall. In the early part of 1938 grain feeding was heavy, pastures started early, and were the best in ten years, causing a steady rise in the milk production per cow.

A heavy flow of milk is expected throughout the 1938-39 winter feeding season. As more cows come into production and with an abundante of cheap feed available, the rate of milk production may be greatly accelerated. It is expected that there will be an increased number of milk cows per capita in the early 1940's, but very likely there will not be much change in the per capita consumption of dairy products. This will probably necessitate adjustments in feeding and management that may reduce the production per cow.

C - The Dairy Markets Situation:

Consumer Demand: There has been a general decline in the national consumption of fluid milk, cream, evaporated milk and ice cream from the recovery peak in 1937, conforming to the general conditions. Even though business activity is improving and total milk production is high, the consumption of fluid milk and cream in cities will not change greatly this winter. The longer outlook, however, suggests an increase in the consumption of fluid milk and cream, with evaporated milk probably increasing in relation to fresh milk.

Cold weather and decreased consumer purchasing power in 1938 have not been conducive to a high rate of ice cream consumption. General improvement in the demand for ice cream may be expected with improved business conditions.

Butter consumption was low in 1936 and 1937 and showed little change during the first 8 months of 1938. Changes in consumer income and pay rolls affect the price of butter, but have little effect on the annual volume of consumption, except as prices may affect production. Butter prices are adjusted so that what is produced is consumed. In 50 years there has been no consistent tendency for per capita production and consumption of butter to increase or decrease. Probably the consumption of butter this winter will increase over the last year or two.

The consumption of oleomargarine, butters greatest competitor, is high, averaging 3 pounds per capita in 1935 to 1937. The retail prices of oleomargarine have been low compared to butter prices during the past 3 years, and much lower in relation to lard and vegetable shortenings in the decade of the 1920's. These price relations stimulated the use of oleomargarine both as a cooking fat and a spread.

The longtime trend in the per capita consumption of cheese is upward. This year cheese is the only important dairy product to reflect an increased consumption over 1937. With large stocks on hand and prospects for relatively high production, the consumption of cheese will probably continue high.

Dairy Products Production: The national production of the principle manufactured dairy products in the first 8 months of 1938 was 9 percent larger than the high production in 1937. Creamery butter production was up 8 percent, cheese 12 percent, and evaporated milk 11 percent. The total production of these products per capita reached a new high and relatively high production is in prospect for this winter.

In Virginia condensed and evaporated milk reflected a 40 percent increase in production over 1936 for the 12 firms producing these products.

Creamery butter production, was 6,500,000 pounds, the largest production on record for the state, practically doubling the production of 15 years ago. Forty-three creameries operated in Virginia last year, but farmers also sold to out-of-state creameries sufficient butterfat to make 1,632,000 pounds of butter.

Ice cream production in Virginia was 3,735,000 gallons in 1937, about 4 percent greater than the previous year. This was the largest production on record, representing the output of 139 firms.

Cottage cheese production in 1937 was 860,000 pounds or 38 percent greater than for the previous year. American cheese production was 40,000 pounds or 13 percent greater than the previous year, but decidedly less than the 946,000 pounds produced in 1929, the peak year.

A total of 588,000 pounds of powdered milk were produced in 1937 by 5 firms as compared to 538,000 pounds in the previous year. In 1930 the powdered milk output was 1,500,000 pounds.

The total production of milk in Virginia in 1937 was about 1,396,000 pounds, or 5 percent more than in 1936. The gross income from milk was about $38,111,000 or 14 percent more than in 1936. Milk is the most valuable Virginia farm product, providing a large part of the food for farm families and a cash income estimated at $18,319,000 in 1937. About 21,000,000 pounds of butter were made on Virginia farms in 1937 of which approximately 5,400,000 pounds were sold. The farmers retailed about 8 percent of the butter they produced; 17 percent was sold to distributors, and 4 percent to manufacturers.

Dairy Prices: During the first 6 months of 1938 dairy product prices declined 20 percent from the recovery peak to December 1937. This decline weakened the price structure in the fluid milk markets necessitating a downward revision of prices paid to producers. Most of the seasonal fluctuations in the annual prices of dairy products have been due to factors other than supply, since the annual milk production per capita has fluctuated between 600 and 650 pounds, or only 4 percent, since 1926. Major movements in the wholesale prices of dairy products correspond closely to the major movement in the general price level of raw materials or basic commodities. With prospects favorable for a large production and increasing consumers, any marked improvement in milk and butter prices during the next five years will depend on further increases in urban prosperity and a rise in the general level of prices.

Recommendations to Virginia Dairymen:

1. The economic end of dairy farming should be the greatest net profit per acre and per cow. Therefore, every dairyman should correlate his farm and dairy operations in a long-time program so that the herd and the crops will supplement each other profitably.

2. In the interest of greater agricultural stability through properly balanced farming, each dairyman should associate himself with the Agricultural and Land Use Planning Programs in the several counties and crop production areas of the state.

3. Since feed is abundant and inexpensive, and since milk cow numbers are relatively low and their market values are increasing, dairymen are raising more heifer calves than are ordinarily needed for herd replacements. Under these conditions Virginia dairymen may fare better two years hence if they raise only the most promising heifers for replacements.

4. Although feed grain prices are low, every dairyman should strive to improve his pastures and hay crops, and should be in a position to make molasses-hay silage if wet weather jeopardizes the quality of the hay at harvest time. High quality, home grown roughage is usually the cheapest source of dairy feed nutrients. More and better roughage crops should be produced and fed on Virginia dairy farms as a method of reducing production costs.

5. Much feed, labor, time and money can be lost by mismanaging a dairy herd. Therefore, every dairy farmer should enroll in a dairy herd improvement association as a means of determining the monthly income and costs for each cow as well as a means of measuring the effectiveness and results of management adjustments.

6. As a step towards improving the herd through breeding, each animal in the herd should be permanently identified and a program should be developed to discover, evaluate, and utilize the superior blood strains in the herd.

7. Only registered, production-bred bulls should be used in the dairy herds of Virginia; either a proved sire, or the son of a good proved sire, out of a high producing daughter of a good proved sire is recommended.

8. To facilitate the management and proving of bulls as well as to protect the farmer and his family, it is recommended that each bull be kept in a bull pen constructed according to the standard Virginia safety bull pen plan. Copies of the plan can be obtained from the Agricultural Extension Service, V.P.I., Blacksburg, Virginia.

9. In order to perpetuate the usefulness of good bulls at a minimum of risk to the various herd owners, it is recommended that dairy bulls be owned, developed and exchanged according to a definite cooperative plan, such as the standard Virginia Cooperative Dairy Bull Association plan.

10. The fact that a considerable investment in the form of buildings and equipment is necessary to produce milk for fluid milk consumption, it is important that the standpoint of producing milk at a low cost per hundred pounds, that a sufficient number of high producing cows be kept to use the buildings, equipment, and labor to full capacity.

11. The individual dairy farmer is more likely to be assured a steady outlet for his milk at fair prices if he sells it cooperatively. It is believed therefore that all fluid milk producers should become active members of a cooperative milk producers association.

12. In the long run it is the high quality product most commonly sought after by the consumer. Therefore, to encourage greater milk and dairy products consumption and to protect the home markets, every dairyman should follow a rigid program of quality improvement in his dairy operations.

CONTEMPLATED ASSISTANCE NEEDED FROM THE U. S. DEPARTMENT OF AGRICULTURE

The Division of Dairy Herd Improvement Investigations, under the capable direction of Dr. J. C. McDowell and Dr. J. F. Kendrick, have contributed greatly to any success that may have come to the Dairy Herd Improvement Association and Dairy Bull Registry and Dairy Cattle Breeding Projects in Virginia. By prompt and accurate tabulations, summarization, and analysis of the Virginia D.H.I.A. records, they have helped to extend the D.H.I.A. testing service further than it has ever gone before in Virginia. This service has been of a high order, providing a dependable basis on which the Virginia Dairy Extension Service is able to prepare specialized studies useful to the dairy farmers of Virginia. It is this fine cooperative service that is greatly appreciated, since it makes possible the accomplishments of greater, more beneficial goals in the general improvement of Virginia dairying.

As in past years, the Virginia Dairy Extension Service will continue to look to the Bureau of Dairy Herd Investigations for the herd record forms and the technical services necessary to the proper utilization of Virginia D.H.I.A. records. As these projects are advanced, changes and adjustments will be necessary, then it is hoped that counsel and advice can be obtained through the U. S. Bureau of Dairy Industry.

It is impossible for the extension workers of one state to keep fully informed of new methods and plans of extension procedure that may be developed in other states. Therefore, the extension dairymen of Virginia welcome the observations and suggestions of those who maintain dairy extension contacts in other states. In this respect Mr. W. E. Winternayer of the U. S. Dairy Extension Service, has collaborated closely with the Virginia Dairy Extension Service in developing the dairy extension plan for the state. It is hoped that this assistance will be forth coming in 1938.

Extension work in dairy manufactures in Virginia is to be revived on a new plan during 1938, to facilitate service to the many plants requiring specialized assistance, and also to establish the Dairy Manufacturing Project on a basis that will include a greater educational sphere, than that of mere personal service to a limited number of producers and manufacturers. Rather special assistance will no doubt be needed from the U. S. Bureau of Dairy Industry in formulating the revised project plan, to accomplish the ends sought.

Special assistance is anticipated in the development of the Virginia 4-H Dairy Project, particularly in the planning of dairy demonstrations. Ideas are needed on plans for useful dairy demonstrations that may be used in 4-H dairy club work and also used to emphasize various phases of the adult teaching program.

PUBLICITY EXHIBITS

Skimmilk, High In Nutritional Value, Can Be Fed Farm Animals Profitably

By C. L. FLESHMAN
V. P. I. Extension Service

Skimmilk, either in the dry or liquid form, may be economically fed to chickens, calves and pigs at the present time since this product is high in nutritive value and the price is abnormally low. Favorable pasture conditions have resulted in increased milk production and the rainy, cool weather coupled with depressed economic conditions has been unfavorable to the normal increase in the consumption of ice cream which usually takes care of the seasonal increase in production. Fluid milk sales throughout Virginia are also lower than a year ago.

The present situation is a flooded dry skimmilk market which has carried the price down to an unusually low level.

Skimmilk in either the liquid or dry form has always been considered a valuable feed for farm animals, but oftentimes the price is high in comparison with other feeds that might be available. Dry skimmilk as a concentrate with an average composition of 35 per cent protein, 50 per cent carbohydrate material, two per cent fat and nine per cent mineral matter. It may be fed in the dry form as an ingredient in mixed feed or reconstituted to its original fluid state by adding nine parts of water to one part of dry skimmilk.

Skimmilk in Poultry Feeds

Dried milks have been in such common use in commercial or home-mixed poultry feed that proof of their adaptability is unnecessary. Although it must be admitted that at no stage of life is milk a natural food for poultry, yet it has been proved at several agricultural experiment stations that skimmilk is a suitable source of food for both growing chicks and adult flocks.

Advantages in favor of feeding dry skimmilk in the starting or growing mash are that it is sound in quality and is palatable to the chick, is of high animal protein content, provides the proper mineral balance, contains an abundance of the growth-promoting vitamin G, provides a feed of good mechanical condition, and is very economical to use at the present price. The V. P. I. poultry department recommends the following starting and growing mash: 40 lbs. yellow corn meal, 15 lbs. wheat bran, 15 lbs. wheat middlings, 5 lbs. ground heavy oats, 7 1-2 lbs. dry skimmilk, 10 lbs. meat-scrap or fish meal, 5 lbs. alfalfa meal, 1 lb. ground limestone, 1-2 lbs. salt, 1 lb. cod liver oil.

Five per cent of the dry skimmilk is the lowest amount ever recommended for chick starters. At many experiment stations 10 per cent is recommended, and in some instances as much as 15 per cent. Dry skimmilk is equally as good as a source of protein feed for the laying flock.

If fluid skimmilk is to be fed to poultry, it should be kept before them all the time, and in order to make either growing chicks or laying hens drink enough milk, water should be kept away from them. They will get enough water in the milk.

Feeding Skimmilk to Calves

Whenever skimmilk is available, calves should be changed from whole milk to this by-product as soon as they have a good start which is from two to four weeks of age. At that time skimmilk can be substituted gradually for whole milk. Skimmilk should be fed, if possible, fresh and warm from the farm separator. If the milk is not warm, it should be heated to 90 or 100 degrees F., before feeding. After the calf is two to four months old, it usually can be accustomed to cool milk, if the temperature is reasonably uniform.

After the calf has been changed entirely to skimmilk, the allowance may be increased very gradually, if the calf is doing well. Not over 14 to 16 pounds of skimmilk daily are needed to insure good development, but if an excess is available after pigs and poultry have been provided for, large vigorous calves may be allowed to drink as much as they wish in addition to their grain and hay.

Where whole milk is marketed and no dairy by-products are available on the farm, calves can be economically raised on reconstituted skimmilk. This is made by mixing dry skimmilk with water at the rate of one pound to nine pounds of water. First mix the dried product to a smooth paste with an equal weight of cold water and then add eight parts more of warm water. The reconstituted milk is fed in the same manner and in the same amounts as fluid skimmilk. Dry skimmilk can also be used as an economical source of protein in the dry feed calf mixtures.

For Growing Pigs and Hogs

If skimmilk is available on the farm it is an ideal protein supplemented to the garm grains in swine feeding, for it is rich in protein of the highest quality and is also high in calcium and phosphorus. Skimmilk is of especially high value for young pigs before weaning and also for several weeks after weaning. When this dairy product is used as the supplement to corn or other grain for pigs, the gains generally will be slightly more rapid than when other excellent protein supplements are used, such as tankage and fish meal. Skimmilk is also an excellent protein supplement for breeding swine.

In feeding skimmilk to swine it must be borne in mind that it is very low in vitamin A and that it has but traces of vitamin D. A ration made up only of grain and skimmilk will be deficient in vitamin D and unless the grain is yellow corn, there will be a serious lack of vitamin A.

A combination of grain and skimmilk produces excellent results when fed to pigs on good pasture, for the green forage provides an abundance of vitamin A, and the exposure to direct sunlight meets the vitamin D requirements. For all swine not on pasture, legume hay should, if possible, be supplied in addition to grain and skimmilk, so as to provide an adequate supply of these vitamins. Legume hay is especially necessary when little or no yellow corn is fed, and also for young pigs during winter when they are not protected from rickets by abundant exposure to sunlight.

For pigs before and soon after weaning, skimmilk is best if fed fresh, though even for young pigs skimmilk which has soured under sanitary conditions is satisfactory. However, if sour milk is to be used, it always should be fed sour. Feeding the milk sweet at one feeding and sour at the next is apt to cause scours.

Although dry skimmilk, when reconstituted by adding one part to nine parts of water, has practically the same feeding value as the fluid skimmilk, this product generally is too expensive to be an economical protein supplement for swine feeding. Experiments in which dry skimmilk and tankage have been fed as the only source of protein supplements for growing and fattening pigs show that the dry skimmilk is worth only about 90 per cent as much per ton as tankage. Dry skimmilk contains only 35 per cent total protein as compared with 50 or 60 per cent for tankage, but the protein in the dry skimmilk is of higher quality, which accounts for its high value as a protein supplement.

MILK DRINKING IS GIVEN BOOST

National Milk Month Benefits National Health

With National Milk Month under way and ending July 10, ingenious methods have been devised, says C. L. Fleshman, dairy manufacturing specialist for the Virginia agricultural extension service, to attract customers to "drink more milk."

In some of the Virginia restaurants the waiter rings a milkman's bell each time a customer buys a glass of milk, which induces other customers to do the same.

Aid Health

Granting that the main purpose of the "drink more milk" campaign is to benefit the producer and distributor, Mr. Fleshman added that "there is so much to be said in favor of the nutritive value of milk, the economy and ways of using more milk, and so little to be said against it, that the indirect object is the better health of the American people."

"Physicians agree that a big majority of American citizens, farm families included," he declared would be physically and probably mentally better off if they drank more milk and used more dairy products.

"Through consumer education, constructive advertising and the improvement of market milk supplies, the per capita consumption of milk has been substantially increased in Virginia during the last two or three years. The consumption, however, is still far below the amount recommended by doctors, dentists, scientists, and nutritionists of one quart per day in some form for every growing child, for every nursing and expectant mother, and for every malnourished person, and at least one pint a day for every normal adult."

Production Up

There is a special reason this year for the "drink more milk" campaign, Mr. Fleshman pointed out. Favorable pasture conditions and a slight increase in the percentage of cows being milked have resulted in increased milk production, and the rainy, cool weather, coupled with depressed economic conditions, has been unfavorable for the normal increase in the consumption of ice cream which usually takes care of the seasonal increase in production.

The present situation, as a result, is a flooded milk supply throughout Virginia and the United States.

Cold storage holdings of butter are more than double the normal average, Mr. Fleshman said, and the exchange price is correspondingly low. The present low price paid farmers for excess and manufacturing milk is accounted for by the fact that the price of butter controls the price of these classes of milk.—By Virginia Agricultural Extension Division.

Marion Herd Tops Butterfat Averages

GALAX, Nov. 20 (Special).—The herd of seven grade Guernsey cows owned by O. M. Thomas, Marion, led the Carroll-Grayson Dairy Herd Improvement Association for October in butterfat production with an average of 537 pounds of milk and 28.3 pounds of fat per cow. The herd of 36 grade Holsteins and Guernsey cows owned by J. M. Phipps, Galax, made the second highest fat average with an average of 613 pounds of milk and 23.3 pounds of fat per cow. The herd of 23 grade Guernsey and Holstein owned by G. C. Felts, Galax, made the third highest average with an average of 445 pounds of milk and 21.5 pounds of fat per cow.

The herd of Mr. Phipps made the highest milk average; the herd of Mr. Thomas, second; and the herd of Mr. Felts, third.

The cow producing the highest number of pounds of milk and butterfat during the month was a grade Holstein owned by Mr. Phipps, this cow producing 1,308 pounds of milk and 44.4 pounds of fat.

There were 122 cows tested in the six herds of the association of which 23 were dry. These 122 cows made an average of 462 pounds of milk and 20.8 pounds of fat each.

CROWGEY HERD IS LEADING PRODUCER

WYTHEVILLE, Nov. 20 (Special). —L. J. Crowgey, Wytheville, was high milk producer and second high butterfat producer in the Washington-Smyth Dairy Herd Improvement association during October. Mr. Crowgey's registered Holstein herd of 26 cows, 24 of which were milking, made an average of 970 pounds of milk and 33.3 pounds of butterfat per cow.

C. M. Morrell, Abingdon, was high butterfat producer and second high milk producer for the month. Mr. Morrell's grade Guernsey herd of 14 cows, one of which was dry made an average of 43 pounds of butterfat and 828 pounds of milk per cow. H. C. Le Sueur, Bristol, Va., was third in both milk and butterfat production with averages of 719 pounds of milk and 33.1 pounds of butterfat from his herd of 47 grade guernseys. Mr. Le Sueur had six dry cows. R. B. Painter, Cripple Creek, Va., was fourth in milk and fat production with averages of 611 pounds of milk and 29.4 pounds of butterfat from 24 grade Jerseys, 2 of which were dry.

The high individual cows in butterfat production for the month were led by a grade Guernsey in the herd of C. M. Morrell. Her production for the month was 88.6 pounds of butterfat. In second place was a purebred Holstein owned by Southwestern State Hospital, Marion. Her production was 69.8 pounds. Third and fourth places were taken by two of L. J. Crowgey's registered Holsteins producing 63.7 and 62.3 pounds respectively.

The high individuals in milk production were led by three of Mr. Crowgey's Holsteins. Their production was 1750 pounds, 1685 pounds, and 1677 pounds respectively. Southwestern State Hospital had fourth high cow with 1662 pounds of milk to her credit for the month.

Sixteen two-tenths per cent of the total cows in the 12 association herds were dry and 16.6 per cent made the 40-pound butterfat honor roll.

COW PRODUCTION

Regardless of the production of dairy cows, each one in the herd requires the same amount of barn space, approximately the same amount of labor, and practically the same amount of feed to maintain her body weight; therefore, taking these things into consideration, the larger the production the less the cost per unit of product. Efficiency of production is usually attained through the use of good sires and sound dairy herd management.

Cows of approximately the same body weight require almost equal amounts of food nutrients for body maintenance, and only after this maintenance requirement is met can a cow produce any large amount of milk. A high producing cow has large capacity and handles her feed more efficiently than a low producer. Low producing cows may use a part of their food in putting on flesh, while high producing cows use their food for milk and butterfat production.

Ability of good cows to divert large quantities of farm roughage into milk and butterfat rather than meat is inheritable and it is the bull that wields the greatest influence in determining what the inherited productiveness of a herd shall be. The quality of the bull at the head of the herd usually determines the limits of dairy progress within a herd. *—Va. DHI. News Letter.*

The Virginia Jersey Breeders' Sale

By R. G. Connelly
Extension Dairyman, Virginia

The revival of Jersey interest is on in the Old Dominion. After a depression inspired lay-off of too many long years, the Virginia Jersey Cattle Club, through its Sale Committee: W. W. Sanford, Orange; James McGee, Fredericksburg; W. M. Johnson, Manassas and R. W. Dickson, Blacksburg, Secretary of the Club; stepped out on October 19th at Orange with a very encouraging sale. Sponsored entirely by the Virginia Jersey Cattle Club and carried through by thirteen "do or die" Jersey breeder consignors, the sale brought remuneration in cash (not too much to be sure); insight into the Jersey sale trends of the times; and a new inspiration to carry on, which even now bespeaks the development of greater Jersey activity throughout the state.

Although the sale average was not high, due to a rather large offering of good yearlings and springing two-year-olds, the breeders were generally satisfied. Judging from the bidding when newly-fresh cows entered the ring, it was quite evident that auctioneer Tom McCord of Montgomery, Alabama, was dealing with milk hungry buyers, in search of immediate, dependable milk supplies to bolster their fall and winter production. Without exception, the buyers' needs were amply supplied in so far as the offering of bountiful Jersey matrons would permit. Indeed, there were scads of production in the sale as the buyers have probably discovered long before now.

There were 51 consignments sold for a total of $6470, averaging about $127 per head. Among the consignments were 22 yearlings and two-year-olds. The sale topping female was the $230 cow, Lindy Owl Moose of Kenwood, 1040066 consigned by W. W. Sanford of Orange, Virginia and bought by R. W. Kash for the Carter Glass herd at Montview Farm, near Lynchburg. This was a large, straight, well-uddered cow that took the eye of everyone from the start.

The top bull of the sale was Blonde Jubilee Lad, 391059, a good type yearling consigned by B. F. Wyatt of Honaker and sold for $160 to H. C. and E. W. Beattie of Columbia, Virginia. This bull was an inbred grandson of Blonde's Golden Lad, 215418, tracing twice through his grandams to Blonde's Potentate, 241071, a gold and silver medal sire.

All of the consignments were taken by Virginia buyers, the largest of which were C. Leith Speiden of Somerset, 11 head; E. W. Thompson of Woodbridge, 9 head; R. W. Kash of Lynchburg, 6 head; Congressman H. W. Smith of Washington, D. C., 5 head; L. A. Burkholder of Denbigh, 5 head.

The highest average for one consignor's cattle was made by W. W. Sanford of Orange with $185 per head for three consignments. W. M. Johnson of Manasses was second with an average of $164 for five head.

DAIRY EXTENSION NEWS

BALANCED DAIRY FARMING FOR A BALANCED INCOME

The principle of balance when applied to agriculture has a very wide application, since farming in itself is fundamentally the manipulation of interrelated and interdependent factors of production in the interest of profit. The fact that dairying is among the most intricate forms of agriculture, due to the numerous elements which comprise a going dairy enterprise, suggests possibilities for wide diversification for profitable and successful attainment. It also suggests possibilities for great risk and loss, if the operator does not have a clear understanding of the several factors which make up the aggregate of a complete, balanced dairy farm set-up.

Because a dairy farm business is a composite of many interrelated and interdependent factors, careful planning is mandatory; successful balance cannot be maintained and profits assured if any one of the elements of the enterprise is out of adjustment. Surveys suggest that lack of thoughtful planning, more than anything else, is responsible for low income and general dissatisfaction on dairy farms. Until every dairy farmer becomes alert to the fundamental requirements of his farm operations, to discover how to make them work together smoothly and efficiently, proper balancing of the farm operation is impossible and regular farm income is uncertain. A good profit is not possible unless the farmer maintains a high standard of all the elements of production and keeps them working together efficiently and economically all the time.

The major consideration on a dairy farm is to hold the correct balance between crops and herd so one can profitably supplement the other. This naturally calls for detailed knowledge of all the factors of crop production and dairy herd management as well as the ability to make both phases work together. It is not enough to be able to produce low cost feed or to maintain a herd of efficient cows; each must complement the other in a manner to assure a balanced annual income.

Considered on a fundamental basis, there are just two important sources of profit on a dairy farm. The first is the alfalfa, silage, pasture, grains and other feeds produced on the farm. The second is the dairy herd, through which the feeds may be converted into a more acceptable and more profitable product. It is true that the feeds should be produced economically enough so they can be sold profitably to the dairy cows at the current market prices. On the other hand, the dairy herd, to justify the investment involved, should be capable of converting the feeds into milk, butterfat, and herd replacements so efficiently as to create additional profit on the investment and labor involved.

The fact that any one element involved in either the production of suitable dairy farm crops or the manufacture of those crops into suitable dairy products may be out of adjustment is usually enough to throw that phase of the dairy farm out of balance with other phases. Frequently it is only one or two factors that throw the entire farm operation out of balance and until these are discovered and corrected, profits may not be attained. The lack of a good supply of hay for winter feeding may be due to lack of lime or phosphate in the soil, poor planting, poor seed, lack of seed innoculation, bad weather, poor harvesting, or poor storage. Any one of these factors might affect the hay crop so that the dairy herd, no matter how efficient, could not utilize the crop profitably.

It may not generally be appreciated that with good quality alfalfa hay, corn silage, corn grain, oats, and barley, one has the essential components of a balanced dairy ration. From the standpoint of a balanced dairy farm, the crop rotation should be organized to provide as many of these crops as possible and in quality and amounts sufficient for the herd's needs. It is through correct crop rotations on his own farm that the dairy farmer must get the high-profit feed crops he needs, and from this viewpoint it is by planning the right rotation that he will be able to provide suitable balanced rations. Whims and fancies may cause him to change his plans, but it should be remembered that any deflection from a tried and proven program of correct crop production is a serious gamble on any dairy farm. In other words, once the right rotation best adapted to the particular farm and herd is discovered, it should be followed faithfully, if the winter feed supply is not to be placed in jeopardy.

Although great pains may be taken to establish a good farm rotation, the farmer must be able to market his crops efficiently, either as cash crops or as feed for his livestock, to get the best profit from his enterprise. Judging from the Virginia Dairy Herd Improvement Association records, it sometimes occurs that dairymen attempt to market their good feeds through inefficient cows, thus dissipating the production factors that may have been successfully coordinated to produce the crops. In some herds a few inefficient cows serve as barriers between their owners and good profit from the crops produced. This is a financial check on the herd owner and his family that to be corrected demands cows capable of converting feed into milk efficiently.

Since the object of the dairy farmer is to market home raised feeds in the form of milk or butterfat, he should maintain a herd capable of serving this purpose. There is very little difference in the cost of maintaining cows poorly adapted for high production and cows well adapted for production. The big difference in earning power lies in the fact that cows naturally adapted for production produce much more milk, hence many times more profit.

It is the inherent ability of the cow herself that limits production in most herds. How efficient an animal may be, however, is best determined by comparing the amount of feed consumed and the amount of milk derived. This is a simple matter of Dairy Herd Improvement Association routine; but on many farms lack of this information is the direct cause of poor feeding, inefficient production, and low profits. It is a well known fact that all animals must first be supplied with the feed necessary for maintenance before any production can take place. The efficiency of the cow, however, depends upon the amount of feed she consumes above her maintenance requirements and converts into milk and butterfat. Hence it is very important that dairy cows be physically able to consume large quantities of feed.

It has been proved that the feed maintenance requirements per 100 pounds live weight of animal is about the same for all dairy cows, but whether a dairy cow is a profitable producer depends both upon how much feed she is able to consume above her maintenance requirements, and upon how much feed and what kind of feed the dairyman gives her. This is a factor for the dairyman to consider.

According to the 1936 Virginia Dairy Herd Improvement Association records, a low producing group of cows averaged 116 lbs. of butterfat in production, consumed $54 worth of feed and returned $62 above the cost of feed for the year. Another group of cows averaged 399 lbs. of butterfat, ate $98 worth of feed and returned $288 above the cost of feed. This simple comparison of Virginia D. H. I. A. cows shows that the higher producing cows produced 3.5 times as much milk at 1.8 times the cost of the lower producing cows, and returned 15 times as much money above feed cost. In other words, due to better ability on the part of the cows, more feed, and better herd management, one cow producing 399 lbs. of butterfat produced as much income over feed cost as 15 cows producing 116 lbs. of butterfat.

The matter of feed consuming ability coupled with natural milk secreting ability are basically important in a dairy cow, but whether these factors can be brought into full play depends upon the dairyman's ability to provide the right rations, and to administer the right care. If the herd is to make progressive improvement, then the dairyman must be further concerned with the factors of breeding and disease control as well as feeding.

RURAL ELECTRIFICATION IN MONTGOMERY

Since 1932 rural electrification has been one of the major projects each year in the Montgomery county extension program. With the interest of the Grange and the home demonstration clubs, in addition to help of leaders in various communities, 477 farm homes are served by electric current in 1937 against only 50 in 1930. The rapid development of rural extension lines has been due largely to the active cooperation of the Grange planning committees and county farm organizations.

Farm homes on the proposed lines were listed and meetings called at central points to explain the cost of service and other facts. Representatives from the rural electric department of the Appalachian Electric Power Company discussed the business side of the projects. It is interesting to note that the use of meetings resulted in every instance in a completion of extension lines far more rapidly than when home to home visits were made to work up new lines. At one meeting for the development of a 14-mile rural line 32 farm families signed applications for service. The entire line was secured within 10 days from the date of the first meeting. Upon the completion of power service through a community, celebrations were held to which were invited customers along the new lines, power company officials and extension people. Local electrical supply dealers exhibited and demonstrated farm and home equipment.

While it is impossible to give the exact number of miles of new lines and rural customers due to the rapid extension of branch lines to individual farms, conservative estimates can be made. During the last 18 months a total of 90 miles of new power service lines have been extended to rural communities, with an increase during the past 12 months of 388 customers.

There is not a single major road in Montgomery county which is not touched in part by rural power lines. This shows that the county is being uniformly covered by power service. The use of electrical equipment has increased more than 150 percent.

EXTENSION DIVISION NEWS

JULIAN A. BURRUSS ..... President
JNO. R. HUTCHESON ..... Director
R. R. PRICE ..... Editor
R. D. MICHAM ..... Assistant Editor

Farmers are not spectacular performers, do not furnish sensations for the country, work in and out of season, but they are recognized as the backbone of the country, the real army that preserves us as a nation. If the farmer can find something helpful in the suggestions given in this paper every month it will have fulfilled its mission.

THE EXTENSION DIVISION NEWS will be mailed free of charge to any one who asks it. The newspapers of the State are invited to use the material in its columns at any time and need give no credit for same.

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HOME DEMONSTRATION NEWS

The 1937 project of the Madison county advisory board was the establishment of a county library. The board of supervisors provided an office room in the county building, and the room was converted into an attractive library with reading tables, table lamp, and flowers. At a shower and silver tea the library received $7.46 and over 100 books. Two book shelves were made by WPA men of lumber given by an interested person. The advisory board purchased two additional cases later. Service of a librarian was secured through the Works Progress Administration.

Records are kept systematically. At present the library has 310 permanent books, while thirty more come in each month from the Extension Library in Charlottesville for a small rental sum. Friends donate such magazines as Red Book, Good Housekeeping, Cosmopolitan, Parents, and Reader's Digest; also the daily paper.

The overdue charge covers incidental cost such as file cards, postage, etc. The librarian is kept busy most of the time. People of all ages read the books, though younger folks between the ages of 10 to 16 and in the twenties seem to be most interested. Over half of the books are out of the library all of the time.

The advisory board says that the county chairman and the librarian have helped to make the project the great success it is.

Two Eastern Virginia counties, Henrico and Norfolk, had the pleasure of entertaining Miss Mirian Williams, food editor of the Farmers Wife, St. Paul, Minnesota, for two days previous to the recent meeting of the American Dietetics Association in Richmond. While in Henrico she was a guest at the meeting of the Montrose home demonstration club.

In Norfolk Miss Lassetter took her to see various homes where improvements recently had been made. Among those visited was Mrs. Percy Gwynn. Here Miss Williams saw a real truck farm besides an improved home. The guests had lunch with Mrs. Gwynn.

One of Miss Williams' objects in coming south was to locate a rural woman who can do real southern cooking and who will demonstrate it at the Country Kitchen conducted by the Farmer's Wife Magazine. After having lunch at her home, Miss Williams decided Mrs. Gwynn was a good representative of this section of the country. We are delighted to think this honor has been bestowed upon a Virginia woman. Mrs. Gwynn will go to St. Paul as a guest of the magazine and while there will demonstrate such delicacies as Old Virginia ham, beaten biscuits, fruit cake, etc. She will be hostess at a tea when these and other items will be served in true southern fashion.

The Low Moor club of this county gives hot lunches daily to 53 underprivileged and undernourished children and sells an average of 62 hot lunches daily to children able to buy. W. P. A. workers prepare the meals, but each day two members of the club supervise the serving, then do the planning and buying for next day. This has been the club's community project several years now and the women feel it is the most important thing they can do. The urgency of the need varies somewhat from year to year but the need itself seems constant.

The St. Mark's home demonstration club of Nottoway county at the beginning of the year started out to get new members. The group was divided into two teams called "The Industrious Fleas" and "The Busy Bees." One point was given each team for each new member. The teams buzzed and hopped around to such purpose that the club of 18 swelled to one of 33 members, and sometimes the attendance at meetings ran as high as 50. At the end of the year the losing team entertained at the home of its captain, Miss Ruby Oliver, for the winners.

Belmont home demonstration club, Spotsylvania county, believes in extending its influence beyond the homes of those persons on roll. This year the club sponsored a sanitation campaign among the colored people of the community. Twenty colored homes enrolled and 12 of these built sanitary toilets. Eight other colored homes that had not entered the contest built sanitary toilets as a result of the campaign.

Fairfax county was fortunate in having Miss Florence E. Hall of the Washington extension service office conduct a panel discussion at Achievement Day. The topic was, "How Can We Educate for Family Life of Today?" Various organizations of the county had representatives on this panel and the audience showed keen interest.

An outstanding feature of the Loudoun 4-H Achievement Day was the presence of the Payne Fellowship students, Winifred Payne of Vermont and Kenneth Anderson of South Dakota. These former 4-H club members are spending a year at the Department of Agriculture in Washington, making an intensive study of 4-H club work as conducted in the 48 states.

COMMUNITY PROJECT "HEALTH"

(By Mrs. Park Ashburn, Health Chairman)

Nansemond county home demonstration clubs chose "Health" as their community project last year and adopted as a slogan "Let's make Nansemond county a healthier place to live in."

Chairmen of the various clubs attended a joint meeting and made plans for the year's work. Our goals were:

1. That the month of May be devoted to Health in the home demonstration clubs of Nansemond county with meetings at night so the men also might hear the discussions.
2. That more 5-point children be developed in Nansemond county schools.
3. That by Achievement Day we raise $75 toward the X-ray work of indigent tubercular patients.
4. That each member give for some undernourished child a can of fruit, vegetable or tomato juice to be brought to our Achievement Day program and turned over to our county health officers for distribution.

At this meeting Dr. Charles Hedges talked on the routine of the health unit of the county and on a full time health unit and what it means.

Each home demonstration and 4-H club, as well as several Parent Teachers Associations in the county, sponsored Health programs during May. The county health department, the doctors of Suffolk, the superintendent of schools, and principals of schools cooperated in making these meetings possible. Authorities lectured on tuberculosis and cancer control, with illustrated slides. Each meeting was held at night in connection with the biscuit contest and a short soil conservation meeting.

When the county nurse brought to our attention the need of X-rays among a number of tubercular children who had no means of paying for such service, we collected $15. The work was done by the state at a minimum cost of $2 per X-ray plate.

On our goal of $75 we collected $54 with around 150 jars of fruits, vegetables, and tomato juice. Cypress Chapel club gave $10 for the X-ray; $5 to the tuberculosis clinic; and $5 to the Victory Memorial Hospital.

In dealing with our "Foods" project during the past year we reached a long way toward promoting better health in the homes of our county.

Seventy women of home demonstration clubs had physical examinations during the year.

Bird of the amber beak,
Bird of the golden wing!* * *
Thou art canopied and clothed
And unto Song betrothed.

—E. C. STEDMAN

HE'LL SING NO MORE

[The editor believes that this tribute from H. P. Chapman, which appeared recently as a leading editorial in *The Roanoke Times*, will strike a sympathetic chord in the hearts of all lovers of birds or pets of any kind.]

"His life from youth to age was passed in a narrow cage." But it was the only life he knew, the only existence his experience encompassed, and so he was content. All day long he hopped back and forth from his seed-cup to his perch, and from his tiny swing near the top of his cage he sent forth from the sheer rapture of his tiny spirit song after song that filled the house with sweetest melody.

The little fellow was a joy to look at, a delight to hear. And as he lifted his voice in the golden notes which poured forth without effort from his tiny throat, "the song on its mighty pinions took every living soul and lifted it gently to heaven."

Of late years he had sung infrequently, and then only on bright, sunny days. For he was growing old, and the quiet and inertia of old age was upon him. But he still chirped a friendly response to the familiar voices of those who loved him, when they came near his cage and spoke to him.

Yesterday he was found dead on the floor of his cage, just a little yellow ball of tumbled feathers. And more than one eye was wet, as the household realized that one of its beloved members was gone from them.

He was just a canary, and for him there is no hereafter. Death is the end. But in his twelve or thirteen years of life — and that is a long life for a canary — he brought joy to a household, and that is more than can be said of some human beings when their time on earth is ended. He will be sorely missed, for he was indeed one of the family. And as we fondly bid our pet a last farewell we are reminded of Longfellow's words:

Such songs have power to quiet
The restless pulse of care,
And come like the benediction
That follows after prayer.

DAIRY EXTENSION NEWS

WHAT ARE THE BENEFITS OF MEMBERSHIP IN A DAIRY HERD IMPROVEMENT ASSOCIATION?

The economics of milk production becomes more complex as requirements of the dairy markets become more exact and competition for the limited space in the consumers' stomach becomes more acute among food producers. In recognition of this condition many dairymen are seeking more precise methods of dairying to provide a wider spread between the cost of producing milk and its market price. Many have taken up the cooperative bookkeeping plan as provided for in standard cooperative dairy herd improvement associations to get the facts on which to base sound dairy herd and farm adjustments.

The reason for the existence of cooperative dairy herd improvement associations might be more widely appreciated in the functions as well as the purpose of those associations were better known. Although the first American dairy herd improvement association (Cow Testing Association) was established in Newaygo county, Michigan, in 1906, patterned somewhat after a similar organization set up in Denmark in 1895, this plan of record keeping has been extended until in 1938 there were 1106 such associations operating in the 48 states and the two territories, Puerto Rico and Hawaii.

Prof. C. W. Holdaway of V. P. I. conducted dairy herd improvement association work among five herds in Montgomery county, Virginia, in 1908. In 1911 two organized associations were established in Virginia. In April, 1938, there were 30 active associations operating in 47 Virginia counties. Today Virginia ranks twelfth among all the states in number of organized dairy herd improvement associations and twelfth in number of herds and percentage of all dairy cows being tested. With approximately 688,000 milking cows in Virginia, 15,283 were tested in the state in April. In other words only 3.7 percent of the milk cows of Virginia are under record observation at present.

Cooperative dairy herd improvement associations in Virginia are dairy farmer organizations, maintained and operated by the dairy farmers themselves, with the cooperation of the V. P. I. Dairy Extension Service, to procure accurate and complete production and cost records on all the cows in the cooperating herds at a minimum of cost. The purpose of the dairy herd improvement association is to assemble the necessary milk production, butterfat test, and feed (hay, silage, grain, pasture) records as well as the money value of the milk and the market value of the feeds, to determine the monthly milk and butterfat production of each cow and her feed consumption for the month, as well as the value of each cow's production above or below the cost of her feed for the month. The feed cost of producing 100 pounds of milk and one pound of butterfat for the herd also is determined. In fact, all the records of the individual cows are totaled, so that the dairyman has at the end of each month a composit production and cost picture of his whole herd as well as the individual cows in it.

Although the supervision of the dairy herd improvement association project for Virginia is centered in the Dairy Extension Service at V. P. I., the responsibility of assembling the records for the cooperating herds rests upon the dairy herd improvement association supervisors (Cow Testers) who are employed by the particular associations. The supervisor visits each herd once each month, at which time he weighs the dairy milk production for each cow; samples and tests each cow's milk for butterfat content; determines the market value of the milk; weighs the hay, silage and grain and determines the amount of pasture each cow consumes; determines the value of the feed; and calculates the value of the product above the feed cost of production. These records are all calculated for the particular month for each individual cow and for the herd and recorded in a special herd record book, which becomes the herd owner's property. These records are all kept on an accumulative basis so that the dairyman may know at the end of any month the records for the herd during the month as well as to date from the beginning of the testing period.

With the cooperation of the association member, the association supervisor keeps a record of service and calving dates. He keeps the identity of the cattle, either by ear tagging or by registration, in the case of purebred cattle. Moreover, he counsels with the member on problems of feeding, breeding, and general herd management. In brief the supervisor cooperates with the dairyman to put the monthly records to work in the interest of more efficient production and greater profit.

Dairy herd improvement associations are conducted strictly on a minimum cost basis. Due to conditions in the particular association, such as number of cows tested, proximity of herds and size of herds, the cost to the particular herd owner may vary slightly in different associations. The schedule of payment, however, is determined very largely by the board of directors in the case of organized associations.

The usual monthly charges are: $3 for the first 20 cows or less, and 8 cents for each additional cow for the salary of the supervisor; $1 to the supervisor for transportation, and one cent per cow to the association for the maintenance of the testing equipment and the purchase of testing supplies. No charge if made to the association member for herd record books, report forms, pedigrees incident to entering his bull for proof in the Virginia Dairy Bull Registry, or the bulletins, monthly news letter, special letters, etc., issued by the V. P. I. Dairy Extension Service on rations, bulls and breeding information, cattle sales prospects, etc.

Over a period of years the benefits of membership in a dairy herd improvement association far out-weigh the financial costs to the herd owners. In the first place the association member has placed into his hands each month up-to-date record information on his herd by means of which he can make prompt and effective adjustments in his dairy operations to meet the changes that occur in milk and feed markets. This feature of testing is now enabling many members to make sound herd adjustments as milk prices tend to decline.

It is impossible to determine whether the daughters of a bull are consistently better than their dams without regular records of production on both dams and daughters. It is impossible to make a breeding analysis of any dairy herd without consistent herd records of production. Yet permanent progress in dairy herd improvement depends directly on the breeding up of more efficient cows. The proving of bulls through their daughters is one of the functions of the dairy herd improvement associations in Virginia. Today its benefits are being reflected in many herds where proved bulls are being developed and their blood is being perpetuated through good sons and daughters.

Experience has demonstrated that every herd has a few cows from time to time that could be sold to the lasting improvement of the herd and to the owner's pocketbook. Such cows easily are discovered and evaluated by a dairy herd improvement association supervisor. The saving of feed, labor, and financial risk resulting from judicious herd culling frequently pays the association membership bill for the year; sometimes for many years, depending on the herd.

Cows vary in their producing abilities. Regular monthly records on each cow enable the owner to gauge these variations and to feed more intelligently. It is frequently a matter of good business to reduce the grain fed to one cow so that another cow may receive more grain. The association supervisor takes these conditions into account when he prescribes the grain ration for each cow each month. This adjusting of grain to production occasionally changes bad losses into fair profits.

In establishing credit, a dairymen's financial standing at the bank has been decidedly improved on more than one occasion by a collection of well-kept dairy herd improvement association record books. Furthermore, in establishing the earning power or real financial value of a herd as a matter of inventory, the association herd record books have proved quite valuable on many farms. The individual dairyman probably will appreciate the value of such records when he has occasion to establish the real worth of his estate.

It is generally assumed that the herd owner knows more about the merits of his individual cows than does any one else since he works with his cattle. If the dairyman can support this knowledge with unbiased records, he can speak convincingly and with well-supported authority. How valuable a dairy herd improvement association record book is when a dairyman selects cattle to be sold from his herd may be left to the good judgment of the dairyman. It is a fact, nevertheless, that many good cows and heifers have been sold from Virginia herds to go into other states. Some of these cows never would have been sold if the dairyman had the production records on them. It may be pure presumption to attemp to appraise the loss some Virginia dairymen have suffered from selling good brood cows, but it is not a hypothetical assumption to state that some Virginia dairymen will not make real sustained improvement in their herds as long as they continue to sell their best females and keep the culls. A set of herd record books will indicate to the dairyman which cows he should keep to supply his herd replacements and which cows he should sell.

There is an element of pride and no little inspiration that comes to a dairyman and his family through membership in a dairy herd improvement association. Such membership suggests progressive inclinations, and a collection of well-kept herd record books stand as stepping stones to better methods and a more prosperous livelihood. Moreover, good record books have been known to raise dejected hopes of dairymen and their families, for in such dairy herd improvement association books they find the guide to more profitable and more satisfactory dairying.

Finally, one can never tell to what advan-

EXTENSION DIVISION NEWS

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tageous purpose dairy herd improvement association records can be put as time passes. Five years ago, who would have thought that herd improvement association records on herds in a city milk shed would be used to justify and sustain milk market price schedules in line with the costs of milk production? Nevertheless, dairy herd improvement association records have been used quite effectively in Virginia milk market price hearings to support the dairyman's pleas for the cost of production for the milk he sells. This benefit in itself more than justifies the cost of dairy herd improvement membership on any dairy farm.

HOME DEMONSTRATION NEWS

Outstanding events in the spring program of home demonstration clubs were the six district meetings of the Federation held at Westhampton, Disputanta, Fredericksburg, Harrisonburg, Lynchburg, and Narrows. Mrs. Ben Wailes, president, and Miss Maude E. Wallace, assistant director of extension, talked on "The Club Woman and Her Federation" and "County Program Planning." Discussions were conducted on such topics as rural health, citizenship and library service, showing the many interests and activities of Virginia women. Among the guest speakers on these programs were Dr. M'Ledge Moffett, dean of women, Radford State Teachers' College; Paul S. Blanford, superintendent, Boys' Industrial School, Beaumont; and Dr. Mildred Thurow Tate, associate professor of home economics, V.P.I. These meetings were well attended by enthusiastic club women, the total attendance being more than 2,000.

Other important events of the month were the six rural electrification schools for home demonstration agents, home supervisors of rural rehabilitation, home economics teachers, and county chairmen of rural electrification. These meetings were made possible through the cooperation of the V. P. I. agricultural engineering department, the Rural Electrification Administration and the local power companies and dealers in electric equipment.

Farms and farm homes in Virginia are being electrified rapidly and, with the coming of electricity, new knowledge and new skills must be acquired in order to use it wisely. Educational agencies and farm and home organizations have new opportunities and responsibilities in this field.

Spring always brings with it a new interest in gardens and flowers. Notes from county reports this year seem to indicate more than just the normal spring fever. Here are a few items:

Louisa, Chesterfield, and Essex club women have conducted garden tours. Through the courtesy of the owners, some of the most beautiful and best loved gardens in the state have been thrown open to home demonstration club members.

From James City county comes this item which shows that club folks are creating as well as enjoying beautiful gardens:

"A lovely meeting was held this month by the Norge Home Demonstration Club in the garden of one of the members. This garden is beautiful and entirely the work of the two club women who own it. Every club member was present that could possibly get there, 48 answering the roll."

Franklin, Halifax, Isle of Wight, Prince William, and Lee counties all report interesting work in the beautification of public grounds. Church, school, and court house grounds are all coming in for their share of attention.

Rockingham and Washington counties held slogan contests in connection with their campaigns for home and roadside development. The winning slogan in Rockingham, "Your yard is first to greet the eye, make it lovely for yourself, your friends and the passerby" was submitted by Mrs. J. C. Myers of Broadway. In Washington county Mrs. James Kelly of the Kelly's Chapel club won with, "Let's work hard for the well-kept home in the well-kept yard." Stickers bearing the slogans were used on their outgoing mail by agent, club members and a number of business firms.

Home Demonstration clubs plan for Chesterfield to be known as the "Wisteria County" and are urging every one to plant this vine. Wisteria was selected because it blooms early in the spring when flowers are greatly appreciated, because it grows very easily, is showy, and most important of all, because it can be used effectively as a screen in hiding unsightly buildings too old and dilapidated to paint and improve in any other way. The idea has been presented before all home demonstration club groups in the county and the women have taken up the plan most enthusiastically. Now we are interested in reaching non-club members and Negroes in the county. In a few years, we hope the Chesterfield Wisteria will be as famous as the Ginter Park Pink Dogwood, or at least that it will conceal many of the eye-sores seen at present.

Augusta, Albemarle, Isle of Wight, and Amelia reported that the landscape gardening specialist had worked with club women during the month, while Highland and Louisa had other guest speakers to help them with gardening problems. Surely, Virginia will become known as a state of beautiful gardens!

Sewing machine clinics have been held in a number of counties this spring at which Dan Kite, agricultural engineering department, instructed club women in cleaning, adjusting, and caring for sewing machines. Loudoun, Alleghany, Madison, Giles, Lee, Wythe, Highland, and Franklin counties reported such meetings in April.

The fifteenth anniversary of home demonstration work in the county was celebrated April 13. About 100 people were present. Miss Wallace was chief speaker. All former home agents attended the meeting. After the program the advisory board was hostess to a birthday party on the Court House lawn. The club members enjoyed the program and the contact with old and new friends.

Home demonstration work was started in Caroline county April 18 with Miss Rebecca Shropshire as agent. This brings the total to 58 counties.

The Barracks Home Demonstration Club members are evidently planning a real canning program this year as they report having placed orders for 9 steam pressure cookers.

In connection with the library campaign in Montgomery county, a book review has been given in each home demonstration club. This has been done through the cooperation of the Book Review Club of Christiansburg, and has been a popular feature of club programs.

Albemarle county leads the way in a new type of advisory board meeting for program planning. A panel discussion on home activities and possible services through the home demonstration program was most successful.

Dinwiddie reports that leaders in adult work have put on fine demonstrations in meal planning and keeping a normal weight. Women are really studying food values. The major project this year has attracted more attention and has stimulated more study than any topic in several years.

NEW BULLETIN ON TERRACING

Terracing alone is not a "cure all" for soil erosion, according to a new Farmers' Bulletin of the Department of Agriculture. It contains the latest and most complete information published on the use of terraces to hold soil on sloping fields.

Written by C. L. Hamilton of the Soil Conservation Service, the bulletin traces the use of field terraces in the United States from colonial days to the present time. It points out why early efforts at terracing generally failed and explains recent developments in terrace construction that led to the improved terraces now widely used in all parts of the country.

Emphasizing the need for careful planning and a thorough understanding of the needs and adaptabilities of fields to be terraced, Hamilton declares that, "unless properly constructed and coordinated with other practices, terraces often accelerate rather than retard soil loss." He illustrates the point with numerous photographs showing fields severely gullied and abandoned because of faulty terrace construction.

The bulletin is written in popular style, is freely illustrated, and contains numerous charts and tables based upon scientific studies that can be used by farmers as guides in the actual work of terrace building.

The title of the new bulletin — F.B. No. 1789 — is, "Terracing for Soil and Water Conservation." A copy may be obtained from the U. S. Department of Agriculture, Washington, D. C.

Proper plowing is probably the largest single factor in terrace maintenance, according to Lyman Carrier, state coordinator for the Soil Conservation Service in Virginia. The terrace ridge is made broader and higher with each plowing and the water channel is kept open if plowing is properly done. Terrace outlets, which frequently present a problem equal to that of the terraces, should be inspected regularly to see that they are carrying away run-off without excessive silting or cutting, Mr. Carrier says.

Nothing, in my opinion would contribute more to the welfare of the states than the proper management of the lands. — George Washington.

The people of America have been sitting on their porches watching their continent go by.—Stuart Chase in Rich Land, Poor Land.

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
Va. A. & M. College and Poly. Inst., & U.S.D.A., Cooperating
EXTENSION SERVICE

THE VIRGINIA DAIRY HERD IMPROVEMENT ASSN NEWS LETTER

SEPTEMBER

In Old Virginia

Cows on D.H.I.A. Test			January 1,	1931	10975
"	"	"	"	1932	11460
"	"	"	"	1933	12283
"	"	"	"	1934	11380
"	"	"	"	1935	11081
"	"	"	"	1936	12042
"	"	"	"	1937	12718
"	"	"	September	1938	16152

Issued by R. G. Connelly & R. W. Dickson, Extension Dairymen
Virginia Polytechnic Institute
Blacksburg

A Dissertation on How Cows Should be Milked

Few dairymen appreciate the full importance of good milking and the possibilities it offers to increase the productive efficiency of the herd. Next to feeding, perhaps no other dairy operation requires so much skill as does milking. Considerable practice and experience are needed to develop a good milker; hence, the best milkers are usually men and women who started as children to milking cows. Regardless of one's present abilities as a milker, improvement is possible through persistent conscientious efforts in the right direction.

Some people have natural physical and nervous attributes which especially qualify them as good milkers. One with soft, strong handsis usually able to milk more efficiently than a person whose hands have been hardened by heavy, rough work. Likewise, people with calm, steady nerves do not, by their demeanor towards the cow, cause her to hold up her milk flow, but rather cause the cow to relax to let her milk down freely. Cows in a state of heavy milk production often have an uncanny way of detecting a milkers nervous disposition, and they react accordingly.

It is a well known fact that a good milker will be able to obtain from the same cow 10 to 25 per cent more milk than the ordinary milker, and sometimes as much as 50 per cent more than a poor milker. If the cow is a heavy producer, then it is still more important that she be attended by an efficinet milker. If the dairyman does not gain the confidence of the cow, she will very likely hold up her milk and become an irregular milker subject to udder troubles.

The Process of Milking

The approach one makes to the cow at the time of milking is one factor which determines whether the cow will yield her milk freely. There is no place in a well organized dairy barn for brutal, boistrous, high strung milkers. Their work, measured in terms of milk yield, usually classifies them as rather inefficient barn help. Cows under their attention are nearly always in a state of high nervous tension and yield their milk grudgingly.

A certain technique is followed by the efficient milker. Some people have a natural aptitude for milking an enjoy it; others acquire the proper technique through painstaking effort. Ordinarily the milking process should be gentle, uniform, rapid, and continuous until practically all the milk has been drawn from the udder. After starting to milk one should not cease until the job is complete. The hands should be dry; wet hand milking is a filthy practice not tolerated in sanitary dairy barns. If the hands must be lubricated it is better to use vaseline than to use milk.

The milking method should imitate that of the calf. The operation consists of an upward movement followed by a downward pull accompanied by pressure. The whole hand should be used. The squeezing should be accomplished by closing the whole hand, first at the top of the teat as a check against the back flow of the milk, and then on the rest of the teat.

Which Quarters to be Milked First

The proper procedure is to milk diagonally-placed teats at the same time because there is blood connection between the teats on the same side but not between those on opposite sides. By milking diagonally placed teats, both sides of the udder are stimulated at the same time and secretion is encouraged.

The length of time required to milk different cows varies. Usually, however, a good milker will milk six to ten cows per hour. Anything that disturbes

or excites the cow may prolong the milking process and decrease the ultimate yield of milk. Hence it is very important that all milking be done quietly and according to a definite daily schedule.

What About Stripping?

Hand stripping cows after milking machines has been one of the most serious objections to the use of milking machines. Some dairymen have discontinued hand stripping after the milking machine, while others have massaged the udder while the machine was still in operation in order to remove all the milk. Some dairymen believe that if cows are not milked completely dry it will cause them to drop off in production or cause udder trouble and increase the bacterial content of the milk.

Experiments have shown that a pound or two of milk left in the udder at each milking does not affect the percentage of fat in the milk, the composition or bacterial content of the milk, the productive persistency of the cow, or her health. Cows on experiment produced 96.7 per cent of the production when they were milked completely. An average of 1.2 pounds of milk and 0.09 pound of butterfat was left in the udder when the cows were not stripped. Under experimental conditions stripping requires 1.57 minutes per cow per day, resulting in a gain of 1.16 pounds butterfat for each hour of stripping. Under most farm conditions, if labor costs are not too high, it would be profitable to hand strip the cows after each milking.

Virginia 4-H Dairy Club Champions

The Virginia 4-H Dairy Demonstration Team won first place in the Southern Section of the National 4-H Dairy Demonstration Contest held at the National Dairy Show in Columbus, Ohio, October 10, 1938, with a demonstration on "The Treatment of Foul Foot in Dairy Cattle".

James Marsh, Mitchells, and Robert Apperson, Culpeper, members of the Culpeper County 4-H Dairy Demonstration team, each received a $250 scholarship for winning this honor. These boys competed with teams from eleven Southern states.

James and Robert won the trip to the National Dairy Show by virtue of winning first place in the state 4-H dairy demonstration contest held at the State Prison Farm. Here the Culpeper team competed with teams from eight other counties. Keith Oliver, special club agent, coached the Culpeper team.

Flora Belle says: "Cheerfulness will open a door when other keys fail".

Little Oscar says: "Pa says it is better to shun the bait than to struggle on the hook".

D.H.I.A. STATISTICS
General Summary

	1937	1938	
	Sept	Aug.	Sept.
No. of active associations	28	31	31
No. complete association reports received	28	31	31
No. herds on test	411	442	436
No. Honor Roll cows (40# B.F.)	2259	2811	2411
No. cows culled	147	224	254

D.H.I.A. MONTHLY SUMMARY TABLES
The Association Summaries for September

Association	Supervisor	Number of Cows In Assn	Number of Cows On Hen. Dry	Number of Cows On Hen. Roll	Av. Production Milk lbs.	Av. Production B.F. lbs.	No. Herds Tested	Herds Av. 30# B.F. or more per cow
Fredericksburg	F.B.Meador	152	16	42	618	32.3	5	80
Orange	J.K.Porter	673	94	188	665	30.9	16	44
Norfolk-P. A.	J. C. Cole	772	94	204	640	30.8	14	50
Chesterfield	Lynn Rowh	275	30	62	648	30.7	7	57
Madison	J.K.Porter	339	37	80	712	30.6	9	56
Peninsula	Lynn Rowh	212	30	63	600	29.1	6	33
Shenandoah	D.Q.Buck	272	24	47	652	28.3	13	38
Loudoun #2	L.K.Martin	1004	114	198	634	28.2	23	30
Fairfax #1	H.R.Hawkins	722	123	182	700	28.2	21	52
Southampton	A.F.Wills,Jr.	325	18	45	625	27.0	7	14
Albemarle	A.F.Wills,Jr.	457	48	69	673	26.7	13	15
Loudoun #1	H.D.Sprague	1051	178	166	616	26.2	25	16
Augusta #2	D.Q.Buck	164	21	18	574	25.8	5	0
State					604	25.7		
Fairfax #2	W.C.Merritt	697	148	116	617	24.9	23	22
Fauquier	L. Watson	846	109	99	586	24.7	25	20
Wash-Smyth	J.C.Spencer	306	54	51	579	24.7	12	25
Loudoun #3	J.H.Hawkins	599	92	76	537	24.6	20	10
Henrico	C.W.Yocum	1436	226	135	618	24.6	21	14
Culpeper #2	J.H.Hawkins	248	37	27	624	24.3	5	20
Culpeper #1	E.S.Hawkins	1155	208	147	589	23.9	26	8
Rmk.-Franklin	A.H.Myers	1092	187	133	621	23.8	35	17
Pulaski-Montg.	F.B.Meador	494	71	62	524	23.7	15	7
Botetourt	J.C.Thomas	523	81	49	565	23.2	20	10
Carroll-Grayson	F.B.Meador	99	13	5	579	23.2	5	20
Pittsylvania	J.A.Moyer	266	35	9	473	23.1	8	0
Augusta-Rockb.	H.W.Irvine	658	85	38	498	22.8	15	20
Frederick	D.Q.Buck	78	7	2	581	22.7	5	18
Amelia-P.Ed.	J.A.Moyer	440	66	25	517	22.1	13	8
Prince Wm.	W.H.Anthony	544	103	58	607	21.2	16	19
Tazewell	J.C.Spencer	143	27	9	487	20.9	4	0
Wise	J.C.Spencer	110	22	6	426	19.7	4	0

Little Oscar opines: "Everyone should be against everyone that is against everything".

The High Herd in Each Association

Association	Owner	No. Cows Herd	No. Cows Dry	Breed	Av. Production Milk lbs.	Av. Production B.F. lbs.	%Prod above Assn Average	Times Milked Daily
Albemarle	Dr.J.L.Manahan	45	3	R.H.	1022	34.3	28	2
Amelia-P.Ewd.	Chas. Moyer	32	7	R.H.	894	32.2	45	2
Augusta-Rockbg.	Chermside Farm	11	1	G.J.	659	31.9	40	2
Augusta #2	F.K.Koiner	37	5	R.&G.G.	598	27.9	8	2
Botetourt	W.H.Williamson	17	0	G.G.	873	35.3	52	2
Carroll-Grayson	O.M.Thomas	7	0	G.G.	753	32.1	38	2
Chesterfield	C.N.Elam	34	2	R.G.	805	37.3	21	3
Culpeper #1	W.J.Smith	34	4	R&G.G.	736	35.6	48	2
Culpeper #2	M. L. Clark	24	1	G.H.	792	30.0	23	2
Fairfax #1	S.P. Spalding	17	0	G.H.&G	957	36.8	30	2
Fairfax #2	B.F.Salsbury	37	3	R.G.	676	33.0	33	2&3
Fauquier	H.J.Wilson #2	22	0	G.H.	1024	37.3	50	2
Fredericksburg	Sherwood Forest F	37	3	R.&G.G.	782	38.7	20	2 &3
Frederick	Schuyler Larkin	5	0	E.A.&G.G.	800	34.7	52	2
Henrico	S.B.Nelson	24	1	J	690	35.3	43	2
Loudoun #1	Overbrook Farm #2	21	1	Mix	890	34.8	33	2
Loudoun #2	D. C. Sands	72	8	R.&G.G.	687	34.8	19	2&3
Loudoun #3	Featherbed Farm	23	0	Mix	915	36.2	47	2
Madison	E.F.Lohr	23	1	R.J.	678	36.0	17	2
Norfolk-P.A.	Lloyd Yoder	23	0	R.&G.G.	777	39.5	28	2
Orange	Montpelier Farm	25	2	R.J.	822	43.9	42	2
Peninsula	J.M.Dozier	53	2	R.G.	768	41.0	41	2 &3
Pittsylvania	N.H.Wooding	24	2	G.G.	591	29.5	27	2
Prince Wm.	W.M. Kline	23	1	G.H.&J.	850	35.8	69	2
Pulaski-Montg.	J.H.Williamson	21	0	R.&G.G.	657	34.5	46	2
Roanoke-Frank.	Miller Orphanage	7	0	Mix	885	39.1	64	2
Shenandoah	J.S. & Paul Roller	10	1	R.J.	736	37.9	33	2
Southampton	J. C. Rawls	14	0	R.G.	868	47.3	75	2 &3
Tazewell	W.M.Sanders	43	7	Mix	529	21.3	-2	2
Wash.-Smyth	E. M. Morrell	14	2	G.G.	777	35.8	45	2
Wise	L. A. Miller	16	1	Mix	517	23.2	18	2

FIVE HIGH D.H.I.A. HERDS IN SEPTEMBER

Butterfat Production

Owner	Association	No.Cows:in Milk	No.Cows:Dry	Breed	Av. Production Lbs.Milk	Lbs.B.F.
J. C. Rawls	Southampton	14	0	R.G.	868	47.3
Montpelier Farm	Orange	25	2	R.J.	822	43.9
J. M. Dozier	Peninsula	53	2	R.G.	768	41.0
Lloyd Yoder	Norfolk-P.Anne	23	0	R.&G.G.	777	39.5
Miller Orphanage	Roanoke-Franklin	7	0	Mix	885	39.1

Milk Production

H. J. Wilson #2	Fauquier	22	0	G.H.	1024	37.3
J. L. Manahan	Albemarle	45	3	R.H.	1022	34.3
Ravensworth Farm	Fairfax #2	34	2	R.H.	1000	32.5
F. E. McDonald	Roanoke-Franklin	29	3	R.H.	988	31.6
S. P. Spalding	Fairfax #1	17	0	G.H.&G.	957	36.8

Flora Belle says: "Ma says to form good habits - they're as hard to break as bad ones".