VIRGINIA

DAIRY HUSBANDRY ANNUAL REPORT 1936

Index

		Page
1 d 3.241	Milk Consumption Campaign	40
1 d 3.26	Milk-Producers' Association	40
1 d 3.27	Dairy Products, Standardization	42-48
* 4 b 1.4	Dairy Cattle;Standards for Breeding Animals	26-32,55
4 b 4.1	4-H Dairy Calf clubs.	36-38
4 b 5.1	Dairy Herd-Improvement Association. . .	15
4 b 5.3	Advanced Registry Testing.	24
6 e 4	Other Departments at College.	1-2
6 e 6.4	Breed Associations.	33
6 h 1.388	Livestock Tours	13

FCL-10

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

STATE OF VIRGINIA

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

1956 ANNUAL REPORT OF EXTENSION DAIRYMEN

R. G. Connelly, Extension Dairy Husbandman
R. W. Dickson, Asst. Extension Dairy Husbandman
R. P. Keithly, Asst. Extension Dairy Husbandman
P. M. Reagan, (½ time) Asst. Extension Dairy Husbandman
C. L. Fleshman, Dairy Manufacturing Specialist

December 1, 1955 - November 30, 1956

THE ANNUAL STATISTICAL REPORT OF THE EXTENSION DAIRYMAN

V.P.I. EXTENSION SERVICE

December 1, 1935 - November 30, 1936

Total Activities of Dairy Extension Staff

1. Days in office (5 extension dairymen) ---------- 639
2. Days in field (5 extension dairymen) ---------- 594½
3. Days on out-of-state trips ---------- 33
4. Days on annual leave ---------- 110
5. Dairy meetings and conferences:

a.	No. with county agents ----------	322	Attendance	-------	2292
b.	No. with home demonstration agents ---------	0	"	-------	0
c.	No. with district agents ----------	9	"	-------	117
d.	No. with U.S. Dairy Bureau Representatives -	18	"	-------	48
e.	No. with other Agri. College " -	14	"	-------	435
f.	No. with Breed Assn. Representatives -------	55	"	-------	1027
g.	No. with dairy plant managers ----------	170	"	-------	515
h.	No. with other state officials ----------	67	"	-------	307
i.	No. with D.H.I.A. members & testers --------	101	"	-------	665
j.	No. with coop. marketing agencies ----------	14	"	-------	20
k.	No. with 4-H dairy clubs ----------	44	"	-------	780
l.	No. with bull associations ----------	14	"	-------	109
m.	No. with other state dairy organizations ---	38	"	-------	1690
n.	No. subject matter meetings addressed ------	101	"	-------	2266
o.	No. other meetings attended or addressed ----	125	"	-------	36081
	Total meetings & conferences --------	1091	"	------	46350

6. Field Activities:

a.	No. county visits made ----------			491
b.	No. different counties visited ----------			391
c.	No. farm visits - 944	No. specific recommendations made ------		624
d.	No. dairy plant visits - 165	No. specific recommendations made ---		198
e.	No. demonstrations and contests held - 44	Attendance ---------		1941
f.	No. dairy tours & field days participated in - 14	Attendance ----		1660

7. Office Activities:

a.	No. special dairy articles prepared for newspapers, magazines, etc -	9
b.	No. "Virginia Extension Division News" articles ----------	12
c.	No. other special publicity articles ----------	25
d.	No. radio talks prepared ----------	11
e.	No. routine business letters ----------	2751
f.	No. circular letters sent out ----------	14142
g.	No. bulletins sent out ----------	1133
h.	No. office conferences ----------	120

INDIVIDUAL ACTIVITIES OF EXTENSION DAIRYMEN

December 1, 1935 - November 30, 1936

	R.G.Connelly	R.W.Dickson	R.P.Keighly	P.M.Reeves	C.L.Fleshman
1. Days in office	155½	147	142	45	151½
2. Days in field	149	124	138	47	136½
3. Days on out-of-state trips	9	0	6	6	12
4. Days on annual leave	8½	41	24	30	7
5. Dairy meetings and conferences:					
a. No. with county agents	90	59	106	28	39
b. No. with home demonstration agents	0	0	0	0	0
c. No. with district agents	7	2	0	0	0
d. No. with U. S. Dairy Bureau Representatives	15	0	2	1	0
e. No. with other Agri. College Representatives	13	0	0	0	1
f. No. with Breed Assn. Representatives	20	2	11	17	3
g. No. with dairy plant managers	10	0	0	0	160
h. No. with other state officials	18	11	0	3	35
i. No. with D.H.I.A. members and testers	24	63	12	2	0
j. No. with cooperative marketing agencies	13	0	1	0	0
k. No. with 4-H dairy clubs	4	4	31	3	3
l. No. with bull associations	11	1	1	0	1
m. No. with other state dairy organizations	9	0	3	4	25
n. No. subject matter meetings addressed	46	6	32	11	6
o. No. other meetings attended or addressed	52	14	11	0	48
	318	152	210	66	314
6. Field Activities:					
a. No. county visits made	130	71	119	36	135
b. No. different counties visited	102	63	106	30	90
c. No. farm visits	300	136	335	69	104
d. No. dairy plant visits	7	0	0	0	157
e. No. demonstrations and contests held	7	18	15	3	1
f. No. dairy tours and field days participated in	4	0	7	3	0
7. Office Activities:					
a. No. special dairy articles prepared for newspapers, etc	8	1	0	0	0
b. No. "Virginia Extension Division News" articles	12	0	0	0	0
c. No. other special publicity articles	10	0	1	4	0
d. No. radio talks prepared	1	1	1	6	2
e. No. routine business letters	1171	818	142	302	318
f. No. circular letters sent out	1104	7927	2675	1816	629
g. No. bulletins sent out	432	254	80	13	354
h. No. office conferences	12	46	4	35	23

THE ANNUAL NARRATIVE REPORT

December 1, 1935 - November 30, 1936

The Dairy Extension Organization

There were no changes in the staff personnel during the current extension year. R. G. Connelly, Extension Dairy Husbandman, had charge of the organization, supervision, and development of the whole Virginia dairy extension program. The program was continued on a five-project basis with each project definitely assigned to one member of the staff. The distribution of project responsibilities was as follows:

Project No. 1, "Dairy Herd Improvement Associations and Advanced Registry Testing" was under the immediate charge of R. W. Dickson. Project No. 2, "Dairy Cattle Breeding and Bull Registry" was in charge of R. G. Connelly, assisted by R. P. Keithly. Project No. 3, "Cooperative Work with State Dairy Organizations" was supervised by R. G. Connelly. Project No. 4, "4-H Dairy Clubs" was supervised by R. P. Keithly. Project No. 5, "Dairy Manufactures, Dairy Marketing, and Consumer Education" was supervised by C. L. Fleshman.

Although definite project responsibilities were assigned to each member of the staff, it was necessary for individual staff members to cooperate temporarily in the promotion of other projects not assigned to them. P. M. Reaves was given no definite project assignment because of the time limitations for administering the project on a yearly basis. Mr. Reaves was on a one-fourth extension time basis, the remaining three-fourths of his time was devoted to resident teaching work as instructor in the Dairy Husbandry Department of the Agricultural College. He assisted with projects No. 1, 2, and 3.

Dairy Extension in Relation to Resident Teaching and Research

The usual policy of close cooperation with the resident teaching and research staffs of the college maintained throughout the year. By means of conferences an interchange of ideas was effected with mutual benefit.

This form of inter-departmental cooperation extended to the point of arranging tours for dairy students, teaching classes, - particularly during the short courses - locating employment for graduates of the college, contacting promising 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 extension program. They served as speakers, assisted in the collecting of breeding and other dairy herd data. They made valuable suggestions with regard to the organization of educational materials and how it could be used effectively. This common interest in the success of the Virginia dairy extension program has made a greater, more effective service available to the state.

THE DAIRY EXTENSION PROGRAM FOR VIRGINIA IN 1936

Conditions that Determine the Program

I. The General Dairy Situation and Outlook - December 1935:

Milk Cow Numbers:

No great change is expected in the number of milk cows in Virginia in 1936. An active Bang's disease eradication program has removed about eight per cent of the cows tested and, as the program is continued among the larger herds in the fluid milk market areas, a greater percentage of reaction is anticipated. Thirty-two counties have been enrolled in an area plan of Bang's disease eradication which is likely to require two years for completion.

Satisfactory herd replacements are very scarce, presenting a difficult problem to dairymen who depend upon purchased cattle to maintain a uniform yearly herd production. Although more heifer calves are being kept, the number of yearling heifers is insufficient to meet current herd replacement needs.

Dairy cow prices have increased 60 to 70 per cent in the last eighteen months, thus encouraging the sale of surplus cows. This over selling of cows, and the gradual increase in the consumer demands for milk have created a milk shortage in several markets. This shortage, however, is temporary, depending upon the gradual adjustment of the milk cow numbers.

Milk Production:

High feed prices, low consumer demand and low milk and butterfat prices caused a sharp decrease in the average production per cow during the past year. As the spread between feed costs and milk market prices becomes more favorable we may anticipate an increase in the milk production per cow. Also, as the consumer purchasing power improves we can expect an increase in milk cow numbers until eventually we may have the usual surpluses, especially in the spring and summer seasons. In 1936 prospects point to an increased per capita production of milk in contrast to the relatively short supply in 1935.

Meat supplies will be short in 1936. Farm prices of butterfat are high relative to feed grains and low relative to meat animals, such as beef cattle, hogs and poultry. These price relationships will very likely continue through 1936, and may tend to limit milk production in the butter producing sections, even though the grain supply will be sifficient to permit feeding at the usual rate.

In the Virginia fluid milk markets, where prices in the winter of 1934-35 were high enough to encourage rather liberal feeding, there is likely to be an increased demand for milk in 1936. Since there are about 4 per cent less cows in Virginia than in 1934 and since feed prices are expected to be lower than they were in 1935, we may expect a higher rate of milk production per cow than in the corresponding months of 1935.

Dairy Market Prices:

All Virginia dairy market prices showed a decided improvement in December 1935 over December 1934, thus tending to accelerate production slightly. The following price index table shows the yearly trend of dairy prices in relation to other farm commodity prices in Virginia:

Index Numbers Based on 1910-1914 = 100

Year	Fluid Milk	Milk Cows	Butter	Chickens	Eggs	Beef Cattle	Sheep	Lamb	Wool	Hogs	Wheat	Corn	Oats	Hay
1932	109	85	70	96	68	80	55	83	41	59	55	57	62	65
1933	100	75	70	84	66	65	57	92	118	56	85	78	82	69
1934	104	78	78	100	80	77	57	104	114	69	94	101	100	77
1935	104	100	91	120	104	116	67	117	106	122	87	115	104	82

Virginia creameries were handicaped in 1935 for want of sufficient volume of locally produced cream. Considerable out-of-state butter was imported by the creameries to meet regular market demands. This reflects the influence of market price rises for both beef cattle and milk cows as well as fluid milk. The tendency is for the cream producers to change either to fluid milk production or beef production when the price differentials are favorable as compared to butter.

With a general improvement in business conditions, fluid milk consumption should show an upward trend in 1936, thus relieving any influence surplus market milk supplies may have upon manufactured dairy products. Improved market milk prices should stimulate an upward trend in butter and other dairy product prices and should also stimulate greater production.

The 1936 dairy outlook for Virginia is for a sustained higher price level, ample feed supplies, gradual increased production per cow and an increase of the total milk cow population. Individual producers may experience fluid milk surpluses as the year advances.

II. The Basic Dairy Problems of Virginia

A. Increasing production efficiency: The first basic dairy extension problem is to bring about more efficient production so that products of the dairy may be provided to the consumer at a fair, but profitable price. This basic problem is constantly before us, taking new turns as new economic situations develop.

Although productive efficiency is a relative term it has a real, specific meaning to the dairyman when dairy prices are low and production costs are high and he is obliged to meet many forms of competition in selling his products. The term implies constant adjustment of the dairy operation to meet ever changing conditions of production and marketing. More efficient production calls for proper management, and proper management in present day dairying calls for intelligence and practical ability of a high order. To provide these qualities in Virginia dairymen that they may produce more efficiently, hence more profitably, is one important basic dairy problem.

B. Fitting Production to Market Demands: The second basic dairy extension problem is to bring about stabilization in production to meet effective market demand. Too often, efficiently produced dairy surpluses develop into ruinous consumption. In order that expensive and burdensome surpluses may be avoided and the market channels kept open, much producer education is needed so that quick and effective adjustments may be made on the farm. The experiences of the past few years show us the falacy of producing commodities when there is no effective demand for them.

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 to 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 improving the dairy farm business enterprise.

It should be every dairymans objective to gain from his business a standard of living equivalent to men equally circumstanced in other professions or 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. Basically, improving the living standards on 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
   (c) Lack of an organized breeding program based on facts
      1. Definite knowledge of each cows producing ability lacking
      2. Too few proved sires used
      3. Lack of facilities for properly managing good bulls
      4. Knowledge of practical genetic principles lacking
      5. Lack of means for perpetuating good bulls in service
   (d) General mismanagement
      1. Irregular barn routine
      2. Haphazard methods
      3. Improper feeds and undependable feed supplies
      4. Too much feed purchased at too high cost
      5. Poor or inadequate building 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. Improper facilities for producing milk
      3. Herd not adapted to market

4. Lack of definite production system
5. Inability to make quick adjustments to meet market demands
6. Markets not easily accessable
7. Lack of a diversified program for utilizing temporary dairy surpluses
8. 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 or products and distructive competition in the markets

D. Submormal 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 milk
5. Low market prices for dairy farm commodities

IV. The Extension Programs

A. The Agricultural or Longtime Dairy Program
(a) To bring about increased productive efficiency in Virginia dairy herds by encouraging the following practices:
1. Feeding according to known production
2. Feeding in so far as possible, only economically home-raised roughages and grain concentrates
3. Culling out inefficiently low producing cows
4. Raising herd replacements, sired by a proved bull and out of high record cows
5. Raising large, well developed herd replacements
6. Adoption of definite breeding programs
7. Adoption of disease prevention and eradication programs
8. Providing suitable facilities for housing and managing the herd

9. Employing labor saving methods and equipment

(b) To fit production to market demand by encouraging the following practices

1. Adoption of a production program which will provide good quality milk to the consuming public at a price which will encourage greater milk and dairy products consumption
2. Adoption of methods of management and farm diversification which will permit effective adjustment in the farm dairy output to counteract the tendency to sell below the costs of production in times of surplus
3. Development of cooperative agencies so that the farm output may be handled in an orderly manner, thus preserving a uniform flow of milk and dairy products to market as needed
4. Promote consumer educational program through organized state Dairy Council

(c) To establish improved methods of marketing and distribution through the following practices

1. Organization of dairy marketing on a cooperative basis
2. Develop cordial relations between producers, consumers and dealers
3. Foster and support the Virginia Milk and Cream Act or some similar plan for regulating and protecting the markets against demoralization in times of economic stress
4. Promulgate the organization of City Dairy Councils as a means for consumer education

(d) To foster and promote better standards of living on dairy farms by the following activities

1. Promote those 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 Short Time or Dairy Extension Program for 1936

(The Projects)

(a) Dairy Herd Improvement Associations and Advanced Registry Testing
(b) Dairy Cattle Breeding and Dairy Bull Registry
(c) Cooperative work with Dairy Organizations
(d) 4-H Dairy Clubs
(e) Dairy marketing, dairy manufacturing, and consumer education

The Dairy Extension Teaching Plan

The following discussion deals with the project assignments among the extension dairymen; the time for conducting the projects; the distribution of project responsibilities in the field; the objectives and goals to be achieved, and the methods of extension procedure.

PROJECT I - DAIRY HERD IMPROVEMENT ASSOCIATIONS AND ADVANCED REGISTRY TESTING

This is a continuous longtime project, which was under the direct supervision of R. W. Dickson, assistant extension dairyman. The project is designed to assemble accurate milk and butterfat production and cost records on Virginia dairy herds, to permit sound adjustments in herd management, to provide a sound basis for breeding, feeding, and marketing to better economic advantage, and to provide a sound basis for general dairy extension teaching.

The 1936 goals for this project were: (a) To increase the present D.H.I.A. membership from 354 to 400 members; (b) To furnish each association member an analysis of his associations annual testing work, with suggestions for making herd adjustments; (c) To hold at least one subject matter meeting with each association to present an analysis of the years work and to discuss the results; (d) To issue regular instructional letters to the association supervisors, to keep them informed regarding new subject matter, changes in policy, and methods, etc.; (e) To have all herd reports completed and submitted promptly to the state office at the end of each month and at the end of the testing year; (f) To cooperate closely with the U. S. Bureau of Dairying in assemblying data for analysis; (g) To supervise and extend the scope of Advanced Registry Testing, particularly the herd test, among the purebred dairy cattle breeders to include 40 herds; (h) To hold regional supervisors conferences on testing organization and policies; (i) To hold 10 feeding schools, emphasizing roughages.

PROJECT II - DAIRY CATTLE BREEDING AND DAIRY BULL REGISTRY

This is a continuous, longtime project which was under the direct supervision of R. G. Connelly, extension dairyman, and R. P. Smithly, assistant extension dairyman. The project is designed to increase the inherent productive ability of Virginia dairy cattle by the adoption among dairymen of selective breeding programs based on established genetic principles.

The general goals in 1936 were: (a) To continue the distribution of purebred dairy bulls sired by meritoriously proved bulls and out of high record cows; (b) To enlarge the scope of the Virginia Dairy Bull Registry as an organized method of proving, evaluating, classifying and perpetuating the usefulness of all good D.H.I.A. sires; (c) To prepare for the owners special analysis reports on all bulls proved in the Dairy Bull Registry; (d) To prepare the production data on all bulls eligible for proof since 1934; (e) To hold at least 5 dairy cattle breeding schools; (f) To set up a system

PROJECT III - COOPERATIVE WORK WITH DAIRY ORGANIZATIONS

This is a longtime program of miscellaneous activities in cooperation with The Virginia State Dairymen's Association, The Virginia Dairy Breed Associations, The Virginia Dairy Products Association, and other organizations to develop a unified dairy improvement program over an extended period of years. This project was supervised by R. G. Connelly, extension dairyman.

The general goals for 1936 were: (a) To encourage each dairy organization to adopt and develop a definite dairy extension program; (b) To 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 medium for the state; (c) To prevail on each dairy breed association to hold one summer meeting as well as an annual meeting in the winter and to see to it that each association including the State Dairymen's Association has a strong program for each meeting.

PROJECT IV - 4-H DAIRY CLUBS

This is a longtime continuous project supervised by R. P. Keithly, assistant extension dairyman, to teach rural boys and girls improved methods of dairy cattle management as well as improved methods of dairy farming and rural living.

The objectives sought in 1936 were: (a) 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 phases, with standard achievement requirements for project completions; (b) To promote interest, and increase the enrollment in the 4-H dairy project to 500 members, (encourage the state dairy breed associations to adopt 4-H dairy club promotion programs, conduct 4-H dairy cattle judging demonstrations and contests in 10 counties, promote 4-H dairy shows in 5 counties, stage a state 4-H dairy show, to include a 4-H dairy cattle exhibit and a 4-H dairy cattle judging contest, participate in one out-of-state 4-H judging contest); (c) To organize and develop subject matter for all counties having organized 4-H dairy clubs, (furnish each club member with a 4-H dairy manual to be used as the basis of project instruction, stage 4-H dairy cattle judging and show fitting demonstrations in at least 6 counties, cooperate with the 4-H Club Department in presenting subject matter at the 4-H dairy camps and at the state 4-H short course.

PROJECT V - DAIRY MANUFACTURES, QUALITY IMPROVEMENT AND MARKETING

This is a continuous longtime project supervised by C. L. Fleshman, dairy manufacturing specialist, to provide technical assistance to dairy plant operators, to improve dairy manufacturing methods, to improve the quality of milk and milk products, and to expand the market outlet for all dairy products.

The objectives of the project in 1936 were:(a) To cooperate with the Virginia Dairy Products Association and the Dairy and Food Division, through the Virginia Cream Improvement Committee, in the education of cream buyers and cream graders with regard to the Federal and State grading requirements, and to set up, if possible, a more definite cream buying system for the state; (b) To maintain and stimulate interest in the present program of composition control tests in an effort to standardize dairy products manufactured in plants not now equipped with adequate laboratory facilities for making these tests; (c) To cooperate with the Virginia Dairy Products Association in an effort to standardize ice cream quality, to bring about a better competitive feeling among manufacturers and distributors of dairy products, and to increase consumption of dairy products; (d) To maintain a dairy products information service, which will consist of a regular monthly news letter called "Virginia Dairy Industry Bulletin". This bulletin will include Virginia dairy news, information on dairy manufactures, research, new developments in the industry and seasonal recommendations; (e) To set up a state Dairy Council composed of local units for promulgating consumer education.

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 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 dairymen visit farms and creameries to get first-hand information and to make specific recommendations. The extension dairymen usually invite the local county agents to accompany them on such visits so that they might be fully informed on the problem. Usually such visits were arranged through the county agent. It has been the policy of the extension dairymen not to make farm and creamery visits that could be made satisfactorily by the county agent.

Subject Matter Publicity Articles: The extension dairymen 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 1936. A number of exhibits were used in connection with the 30th 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 affective 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 advise 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, dairymen'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 tours, field days 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 donducted 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 competitive 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 our 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 who demonstrate new ideas are the 4-H dairy club members, creamery managers and the key 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 Responsibility in Promoting the Dairy Extension Program

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 or failure of any dairy extension project. Therefore, every effort has been made to promote the 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 measurers of success or the reasons for, as well as corrections for, project failures.

PROJECT I

Dairy Herd Improvement Associations and Advanced Registry Testing

There were no major changes in the general administrative policies affecting this project during 1936. The same policy of to gradually increasing the supervision of the records for each farm has yielded encouraging results. Confidence has displaced that element of doubt previously entertained by some dairymen with regard to the accuracy and dependability of dairy herd improvement association records. This growing confidence bespeaks a continued growing demand for this testing service now in evidence throughout the state.

Every dairy herd improvement association member received twelve monthly records on his herd in 1936 and at the end of the year each dairyman had an accurate and complete yearly herd record book for his herd. Each supervisor is required to submit to the state dairy extension office each month a copy of all records, now entailing 13,522 cows, obtained from each farm during the month. These records are inspected for accuracy and completeness and the system has served to improve the quality of the supervisor's work. In addition, the individual herd record books from the farms in each association were inspected and studied both from the standpoint of their accuracy and completeness and the facts they furnished for proving bulls and gauging production costs and herd management practices. This close work with the association membership and the supervisors has resulted in a better understanding of the work and a greater desire to get the true facts affecting dairy herd management and improvement.

The monthly barn record reports for each herd as submitted by the association supervisor are permanently filed in the state office as a protection to the dairyman against loss of his records through fire or otherwise. These monthly records, now including 13,522 cows, are studied and summarized and furnish the basis of monthly reports to more than 600 Virginia dairymen interested in dairy herd management and record work. These records are also the basis of a detailed cost account report to each dairyman for his herd at the end of each year. These reports also include association averages so that the individual dairyman may know his status with respect to the whole association. These reports are also the basis of adjustment recommendations from the extension dairymen to the association members and others. Although much progress was made in this record analysis work in 1936, the field is still full of possibilities for development and service.

Frequent conferences with the county agricultural agents and cow testers has served to unify the D.H.I.A. project in each county and to establish each association farm as a continuous dairy herd and farm management demonstration. This organization in the several counties was strengthened in 1936 and its influence is reflected in the steady increase in the D.H.I.A. membership.

In 1936 with the assistance of the Virginia State Dairymen's Association and the U. S. Bureau of Dairying a system of ear tagging was set up to permanently identify grade cattle in the D.H.I.A. herds. Each D.H.I.A. supervisor has been equipped to ear tag the cattle in his association to permanently identify each animal for D.H.I.A. testing, and the various state disease control tests as well. More than 100 herds are participating in the ear tag program.

The Virginia dairy herd improvement association project has continued to grow and develop since its beginning. In 1924 there were 15 associations comprising 281 herds totalling 7,366 cows. In 1936 there were 24 associations consisting of 364 herds, totalling 13,522 cows.

More significant, in 1934 the average yearly production for a D.H.I.A. cow was 6,749 pounds of milk and 279 pounds of butterfat. In 1935 the average production was 7,442 pounds of milk and 308 pounds of butterfat per cow; the highest yearly average ever attained in the Virginia D.H.I.A. The rather striking increase in the average production of such a large number of cows suggests the rather wide adoption of improved dairy management methods in recent years. It also may suggest the gradual infusion of business methods among the dairy farmers.

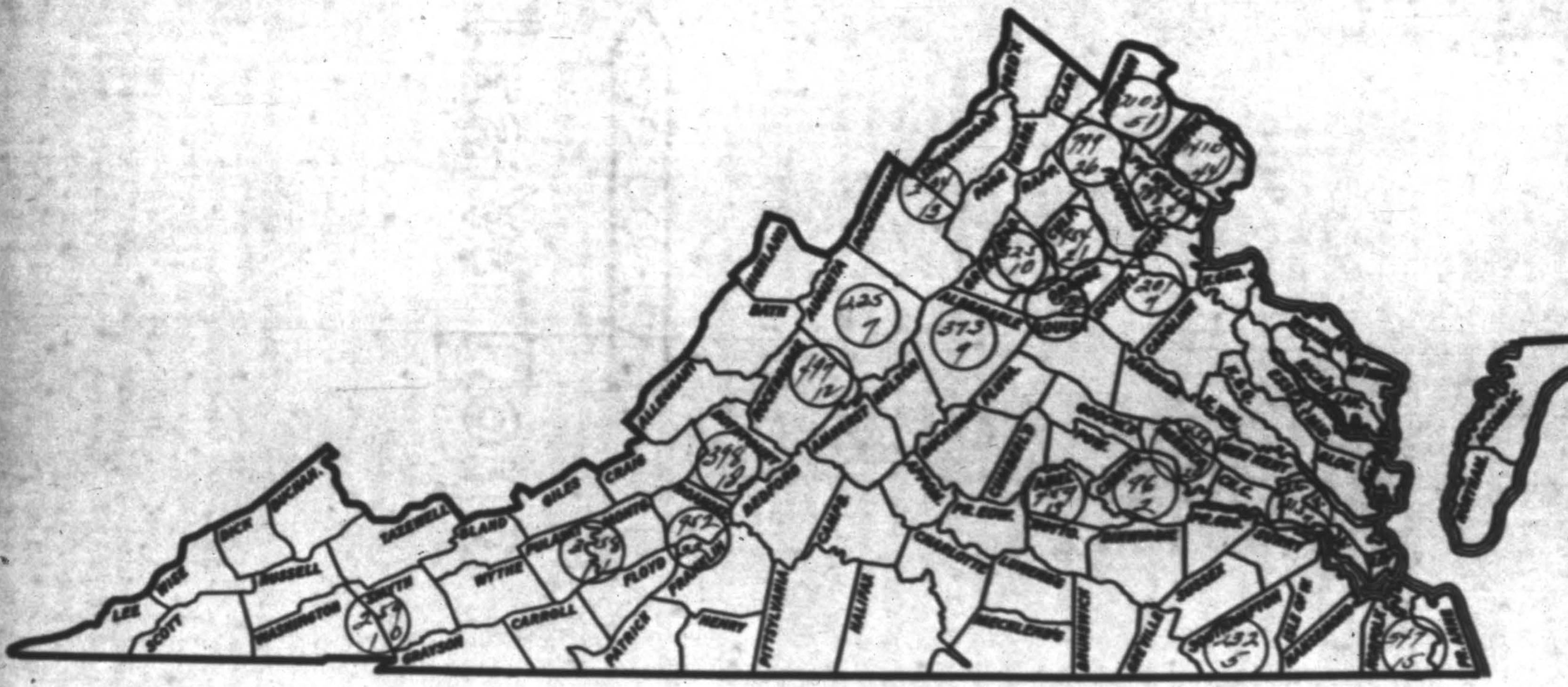
The promotion of improved feeding methods is an important feature of the Virginia dairy herd improvement association project. In order that the association members and others may have the basic information by which they might balance their own dairy rations and feed more economically, seven two-day dairy cattle feeding schools and eight feeding meetings were conducted in 1936. In addition as the effects of last summers drought became more evident and the price of all feeds began to rise, it was necessary to issue numerous advisory letters on feeding and how to balance economical rations. Approximately fifty feeding letters with supplemental bulletins were issued during the year. The development of this phase of the testing project has had an excellent effect upon the D.H.I.A. membership and it is replete with further possibilities for development, especially with respect to the growing and feeding of more and better quality home-grown roughages.

The demands upon the information obtained from Virginia D.H.I.A. herds are becoming more extensive and more exacting. The Virginia State Milk Commission has seen fit on several occasions to request up-to-date analysis of production and feed cost records from D.H.I.A. herds supplying particular markets. In 1936 these records furnished a sound basis for several substantial increases in fluid milk prices to meet the rapidly increasing costs of production. This may be regarded as one of the hidden benefits of D.H.I.A. testing in Virginia. It may also be regarded as a form of philanthropy in which many otherwise self respecting non-D.H.I.A. members are equal benefactors in the markets with those men who pay for the records.

Increasingly greater demands were placed upon the D.H.I.A. project for the production records needed in all the genetical phases of the Virginia dairy bull registry project. While the dairy bull registry deals particularly with the assembling and analysis of genetic information on dairy bulls and foundation females, the production records which are needed must be obtained from D.H.I.A. herds. The procurement of these production records in itself demands closer supervision of all testing as well as a careful analysis of the resulting information if the proving of bulls is to be dependable. With the cooperation of the D.H.I.A. supervisors in identifying cattle in the various herds and in making their herd record book entries complete it was possible to prove 76 bulls in the Dairy Bull Registry. in 1936.

Although there was only one new dairy herd improvement association organized in 1936 - the Augusta #2 Association - there was a general increase in the membership and number of cows tested in the other associations. Practically every Virginia D.H.I.A. supervisor is carrying his maximum quota of herds for efficient service. In most counties any further expansion of the D.H.I.A. service with in the counties will call for the organization of new association. It has been the extension policy to so organize each association that each supervisor will have herds enough to keep the cost per record low to the dairyman and at the same time assure a living wage for the supervisor. This has resulted in practically all supervisors carrying rather full schedules, but recent developments suggest the possible need for several newly organized associations. This gradual expansion will depend upon the degree of economic improvement in the various dairy sections.

The accompanying map shows the general location of dairy herd improvement associations in Virginia. The associations tend to localize in the fluid milk sheds suggesting the favorable attitude generally existing among fluid milk producers and as economic conditions improve further increases in the D.H.I.A. membership is anticipated.



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

TABLE I

Thirteen Years of Progress in Virginia Dairy Record Work

Year	No. Assns (1)	No. Herds on test (1)	No. Cows on test	Indicated Averages: Milk (2)	Fat (2)	No. Cows Culled	No. Bulls Bought
1936	24	364	13522	Records not yet completed		2537	51
1935	23	342	12430	7442	308	3278	45
1934	26	336	11554	7251	300	2688	23
1933	27	325	11500	7235	300	1800	22
1932	28	377	12970	7371	302	2333	32
1931	24	368	12259	7388	303	2167	52
1930	20	385	12083	7262	299	1919	70
1929	20	448	12283	7226	297	1660	71
1928	20	432	12204	7104	294	1706	77
1927	21	407	11468	6951	289	1208	65
1926	18	353	9563	6805	284	1432	65
1925	18	346	9010	6562	263	1566	70
1924	15	281	7366	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 I presents a statistical picture of D.H.I.A. development in Virginia during the past 13 years. In 1936 there was an increase of 22 herds and 1092 cows in the D.H.I.A. Although all the records are not yet available for determining the 1936 D.H.I.A. cow production average, indications are that it will exceed the high average of 1935.

The large number of cows culled during the past three years is due to unfavorable milk prices, gradually increased feed costs, and the Virginia Bang's disease and Mastitis eradication programs. The table indicates the gradual increase in herds and cows tested as well as the increase in average milk and butterfat production in the past four years.

Chart I, which supplements Table I, shows graphically the trend in D.H.I.A. testing, average butterfat production and rate of herd culling in Virginia from 1924 to 1936.

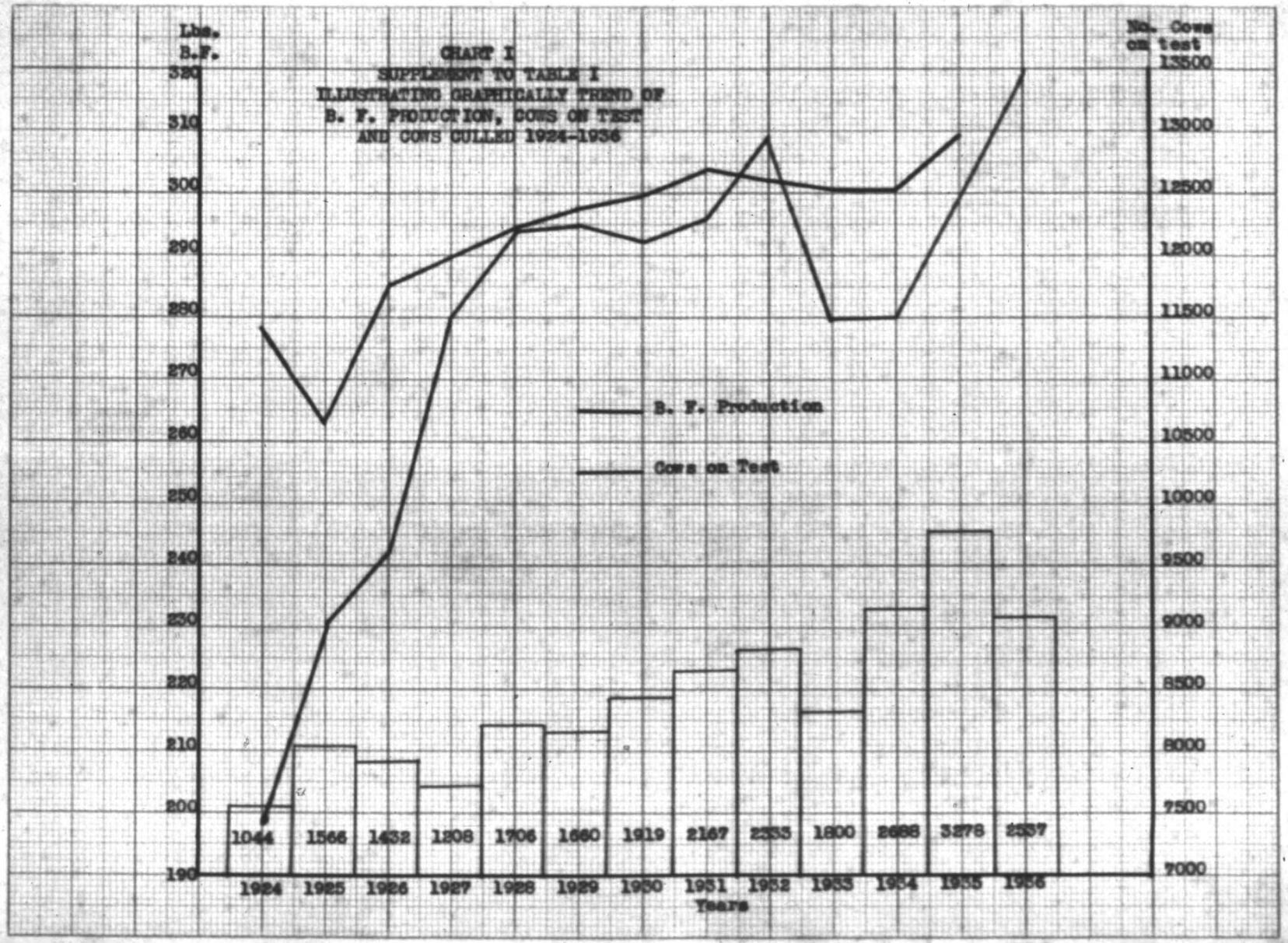


CHART I
SUPPLEMENT TO TABLE I
ILLUSTRATING GRAPHICALLY TREND OF
B. F. PRODUCTION, COWS ON TEST
AND COWS CULLED 1924-1936
Lbs. B.F.
No. Cows on test
320
310
300
290
280
270
260
250
240
230
220
210
200
190
13500
13000
12500
12000
11500
11000
10500
10000
9500
9000
8500
8000
7500
7000
B. F. Production
Cows on Test
1044
1566
1632
1808
1706
1660
1919
2167
2333
1800
2698
3278
2537
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
Years

TABLE II

Developments in Selected Dairy Herd Improvement Associations

Association	Year	Av. B. F. Production	Av. Feed Cost	Av. Return Over Feed Cost
Fairfax #1	1928	353	$117	$189
	1929	340	117	183
	1930	346	128	184
	1931	362	110	244
	1932	352	78	236
	1933	340	75	189
	1934	334	83	171
	1935	349	90	164
Henrico	1928	327	134	227
	1929	351	135	246
	1930	336	126	207
	1931	329	104	180
	1932	314	86	145
	1933	300	81	114
	1934	321	95	103
	1935	341	103	109
Loudoun #2	1928	319	95	198
	1929	329	99	204
	1930	356	109	218
	1931	339	91	199
	1932	356	73	172
	1933	338	73	142
	1934	314	81	118
	1935	329	99	123
Loudoun #1	1930	304	94	184
	1931	329	92	195
	1932	322	72	134
	1933	330	77	128
	1934	345	87	125
	1935	344	93	126
Orange	1930*	333	90	174
	1931	306	95	147
	1932	354	78	183
	1933	337	61	146
	1934	320	59	115
	1935	328	73	113

*Madison included with Orange for 1930

Table II presents the records of those associations averaging 300 or more pounds of butterfat per cow year during the past six years. The feed cost and returns above feed cost per cow year are also indicated to show the general influence of fluctuating milk and feed prices. The 1935 feed costs reflects the general rise in the feed price level.

TABLE III

Relative Efficiency of Virginia Herd Improvement Association Cows

Range of Prod. B.F.	Average Yearly Prod. Per Cow	Number of Cows	Yearly Feed Cost per Cow Year	Average Yearly Return Over Feed Cost Per Cow Year	Number Cows of Varied Production Capacity Required to Earn a Return of $2,000 Over Feed Cost	Yearly Amount of Fat Put on the Market by Cows of Different Groups
1-49	14	4	$66	$-57	0	0
50-99	61	25	54	-17	0	0
100-149	107	85	55	13	154	18478
150-199	154	282	64	37	54	8516
200-249	203	782	69	62	32	6496
250-299	251	1384	77	83	24	6024
300-349	322	3095	87	120	17	5474
350-399	397	915	96	162	12	4764
400-449	446	405	102	193	10	4460
450-499	496	151	105	216	9	4464
500-549	545	57	114	250	8	4544
550-599	594	13	120	285	7	4158
650-699	659	7	125	338	6	3954
700-749	732	4	133	292	7	5124
750-799	775	1	130	433	5	3875

* Figures taken from tabulations by Bureau of Dairy Industry of 7204 Virginia cows that were on test for 12 months 1934-1935

Table III shows the frequency distribution of Virginia D.H.I.A. cows according to their productive efficiency. As the table indicates there were no returns above feed cost until a cow produced at least 250 pounds of butterfat per year and it is not likely that any real profit was made above the total costs of production until the cow averaged 300 pounds of butterfat annually.

Another significant point is that a dairyman with cows averaging 400 pounds of butterfat annually obtains the same income above feed cost by milk 12 cows that would be obtained by a dairyman milking 24 cows averaging 250 pounds of butterfat annually. In addition the dairyman with the more efficient cows would put 1200 pounds less butterfat on the market each year. From the standpoint of using ones time and labor efficiently it is questionable whether a dairyman should milk cows producing less than 300 pounds of butterfat annually.

TABLE IV

Average for Various Associations as Compiled by Bureau of Dairying from 1935 Records Completed up to January 1, 1936

Association	No.Herds on Test Dec.1935	No.Cows on Test Dec.1935	Av. Production Per Cow Year Milk	Fat	Av. Feed Cost Per Lb.Fat	Per Cow Year
Albemarle	14	547	5790	231	.31	$71
Amelia-P.E.	11	363	6741	281	.31	86
Augusta-Rockbridge	5	305	5862	245	.27	67
Botetourt	9	415	7164	270	.31	85
Chesterfield	2	90	7795	385	.24	94
Culpeper	18	779	8041	319	.22	71
Fairfax #1	22	653	8858	349	.26	90
Fairfax #2	20	692	7993	315	.28	88
Fauquier	22	620	6556	271	.24	65
Fredericksburg	8	204	6001	295	.23	67
Henrico	23	1464	8480	341	.30	103
Loudoun #1	25	945	8069	344	.27	93
Loudoun #2	24	933	7361	329	.28	92
Madison	8	227	5469	275	.21	58
Norfolk-Princess Anne	19	564	7097	318	.31	100
Orange	14	525	7000	328	.22	73
Peninsula	8	269	6852	304	.27	82
Prince William	25	774	7428	274	.27	73
Pulaski-Montgomery	11	341	7021	298	.21	64
Roanoke-Franklin	32	867	7984	290	.36	104
Shenandoah	9	230	7314	321	.22	70
Southampton	7	347	6064	250	.28	70
Washington-Smyth	10	251	7250	284	.23	65
State	346	12405	7442	308	.276	85

Table IV presents a brief summary of dairy herd improvement associations in Virginia during 1935. Number of herds, number cows on test, average production, and average feed costs per cow year and per pound of butterfat is tabulated for every association. Eleven of the 23 associations averaged 300 pounds of butterfat; however, the average for all cows on test was 308 pounds of butterfat. Some of the less-than-three hundred pound association averages were produced at a lower feed cost per pound of fat than was the case in some of the associations averaging three hundred pounds of butterfat or more per cow year. Apparently some of the associations having the lower averages followed a roughage feeding program which provided less production at a lower feed cost.

TABLE V

Virginia Honor Roll Herds in The National Association

Year	No. Herds Averaging 400 lbs. fat: or Above	No. Herds Averaging 300 lbs. to 399 lbs. fat:	Total Herds Qualifying for National Dairy Association Diplomas
1926	5	54	59
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	150	157
1935	13	151	164
1936	17	160	177

Honor Roll Certificates are awarded each year to all herds averaging at least 300 pounds of butterfat per cow year during the previous testing year. Table V shows the number of qualifying herds since 1926. In 1936 more herds qualified than ever before.

Advanced Registry Testing

In line with the general dairy extension policy to have more herds and fewer selected cows tested for production, greater efforts were made in 1936 to promote the Herd Improvement Registry division of the Advanced Registry system of testing. These efforts resulted in an increase from 200 cows in the Herd Improvement Registry in 1935 to 447 cows in 1936. More than half the cows tested in the Virginia Advanced Registry in 1936 were tested in the Herd Improvement Registry. As dairymen become more familiar with the principles of dairy cattle breeding there is likely to be a greater demand for herd records rather than forced records made by selected cows, in evaluating the breeding merits of individual animals.

In 1935 there were a total of 534 cows tested in the Advanced Registry. In 1936 there were 854 cows tested. Much of this increase may be attributed to the fact that the regular D.H.I.A. Supervisors also do the Advanced Registry testing thus greatly reducing the cost of getting Advanced Registry records. Some dairymen have taken advantage of this system to secure official production records on the most promising cows in their herds, thereby increasing the sale value of the cows.

TABLE VI

ADVANCED REGISTRY REPORT
Statistics

December 1, 1935 to November 30, 1936	Guernsey	Holstein	Jersey	Total
Cows on test dropped before end of test	78	1	1	80
Cows with completed records and credited by clubs	75	14	13	102
Cows with completed records not yet credited	29	1	4	34
Cows with incomplete records on test	153	7	11	171
				387

Average Production

Breed	305 Days: No. Cows	Milk	Fat	365 Days: No. Cows	Milk	Fat
Guernsey	21	7748	377	54	11520	579
Holstein	4	9281	337	10	13606	486
Jersey	10	8216	421	3	9314	467
	35			67		

HERD IMPROVEMENT REGISTRY
Statistics

Breed	Herds	No. Cows
Guernsey	10	152
Holstein	9	270
Jersey	1	25
Total	20	447

The above table presents a statistical picture of developments in the Virginia Advanced Registry during the past year.

During 1935 twenty-nine breeders were enrolled in the Advanced Registry and in 1936 there were 40 breeders enrolled. Three hundred more cows were tested in 1936 than in the previous year, due primarily to the increase in Herd Improvement Registry herds.

All monthly Advanced Registry production records are summarily filed with the Dairy Extension Department at the Agricultural College. These records furnish the basis for a monthly Honor Roll report to more than 100 Virginia dairymen and breeders, tending to stimulate interest in this phase of the testing program.

PROJECT II

Dairy Cattle Breeding and Dairy Bull Registry

The need for and general plan of this project were discussed in some detail in the 1935 annual report. The immediate objectives of the project, however, are two fold: first, to discover and to evaluate the production inheritence of cattle in Virginia dairy herds; second, to organize and promote practical dairy cattle breeding programs based on genetic facts that will tend to concentrate, preserve and perpetuate desirable heritable dairy traits in Virginia herds. The attainment of these objectives necessarily involves the organization and development of a longtime educational program based upon the best genetic information available. The nature of the program and the general lack of basic genetic information among dairy farmers requires a rather careful procedure destined to cover a long period of years.

Since there is a great economic necessity for higher inherent producing ability in our Virginia dairy cattle; and since it takes considerable time to breed up dairy cattle and thereby impress the general dairyman with the economic possibilities of manipulating the genetic inheritance of dairy cattle, it has been thought advisable to promote this project in three distinct phases; These phases include an Educational Phase, A Research and Analytical Phase, and a Promotional or Extension Phase. These three phases received specific attention during 1936.

The educational phase was promoted through 5 dairy cattle breeding schools, one dairy tour for Augusta county, Guernsey breeders, 3 dairy field days and a short course at the agricultural college. Organized teaching programs dealing with the practical application of genetic principles to Virginia dairy cattle breeding problems were presented on these occasions. This instruction reached more than 800 dairymen, dairy herd improvement association supervisors, and county agents, and was directly responsible for numerous small conferences on individual breeding problems and the organization of two cooperative dairy bull associations.

It is quite evident that when dairymen understand that dairy cattle breeding is neither theoretical nor controlled by secret formulae, nor bound by supernatural laws with which one should not tinker, they are quick to see the economic possibilities and are prone to adopt consistent programs of breeding. This appears to be the general reaction from the instructional programs.

The educational phase of this project was started four years ago as a preliminary step to the establishment of the Virginia Dairy Bull Registry, a more concrete element in the project. The ground work laid in the dairy cattle breeding schools, dairy tours, field days, and the general program of correspondence and publicity in familiarizing dairymen with the newer conceptions of dairy cattle breeding is reflected in a spirit of intelligent cooperation from dairy farmers throughout the state. Frequent requests from the counties to repeat the breeding schools has furnished the encouragement needed to go on with the organization and promotion of a definite dairy cattle breeding program.

Although breeding schools were conducted where special instruction was requested or thought to be needed, the major emphasis in 1936 was placed on the collection and analysis of production records and other genetic data for the proving of bulls. Every registered purebred dairy bull in a Virginia D.H.I.A. herd automatically becomes a candidate for a proved sire. He is entered in the Dairy Bull Registry by the D.H.I.A. supervisor and his daughters are listed as they freshen. With all record information accurately and completely entered in the dairymen's herd book, recording the proof data for the bull is done by the extension dairyman who visits the dairymen's farm for the purpose. Four hundred and forty seven bulls are now listed in the Registry.

This method of proving bulls has been effective. In 1936 seventy-four bulls were proved or reproved in Virginia. It is anticipated that more bulls will be proved in 1937 because as sufficient proof data becomes available it is assembled on a visit to the farm and submitted to the U. S. Bureau of Dairying for calculation and permanent record. Although the D.H.I.A. supervisors do not assemble the proof data for any bulls, they are held strictly accountable for the accuracy and completeness of the records in the dairymen's herd record book. This division of labor and responsibility has encouraged the supervisors to do better work and has made the proving and reproving of bulls a relatively simple procedure.

All proof records pertaining to any bull are specially recorded and filed in the state office by the extension dairyman. This method of assembling proof records has proved valuable in that it permits a careful check up on all records on the farm where they are made; it permits a careful check up of the environmental conditions under which the records were produced; above all it permits the extension dairyman to discuss the problems of breeding with the man who owns the bull and who is entitled to the best counsel available in solving his dairy problems. The proof records finally serve as a summary report on the proof of the bull, furnishing the dairyman with the essential facts needed in a good breeding program. The third phase of the project is, concerned with the promotion or extension of better breeding practices. Once superior inheritance is discovered it develops upon the extension dairyman to find ways of preserving and concentrating that inheritance in the particular dairy herd, and in others if possible so that the average inherent level of as many cattle as possible may be raised. This involves frequent consultations on herd breeding programs, it also calls for cooperation with the dairyman in procuring dependable herd sires.

In 1936 more than 45 dairymen were advised with regard to their breeding programs, Thirty-eight dairymen were directly assisted in the selection of herd sires among these were 6 well bred Guernsey bulls purchased by the Augusta County Cooperative Guernsey Bull Association. Eighteen breeders were assisted in placing good sons and daughters of proved sires. Two dairymen were assisted in leasing bulls from the U. S. Dairy Research Center at Beltsville, Maryland. Two new dairy bull associations, one in Augusta county and the other in Botetourt county, were organized and incorporated to carry on a cooperative breeding program.

In every bull transaction, only animals from proved ancestry were recommended, thus tending to establish and concentrate better inheritance in the various herds. Finally, pedigrees were prepared for more than 100 bulls entered in the dairy bull registry. A copy of each bull's pedigree was furnished his owner with a critical report and recommendations.

TABLE VII

Bulls Proved in the Virginia Dairy Bull Registry, 1936

Guernseys

Owner's Name and Address	Name and Number of Sire Proved	No. Daughter Dam Comparisons	Record Av. B.F. Prod. Per Daughters	Av. No. Days in Record
H. W. Anderson, Sutherland	Whippernock Foremost 150835*	10	358	299
Bayville Farm, Lynnhaven	Caumsett Champion 136679	8	451	302
Bayville Farm, "	Bayville Confident 105751*	15	409	303
Curles Neck Farm, Richmond	Midview's Golden Ace 160363	5	354	304
W. S. Dickinson, Fredericksburg	Sherwood's Challenger 187628*	6	365	305
G. E. Fisher & Sons, Gordonsville	Sterling Lad of Burnley 192261	6	341	303
G. H. Fisher & Son, Middletwon	Endless Caverns Ambition 184600	8	358	302
J. R. Hubble, Victoria	Old Gold 162497*	7	358	297
Earnest Miller, Fentress	Royal Gold of Honey Brook 156749	7	370	305
G. S. Myers, Leesburg	Nicholas of the Wilderness 95226*	9	422	298
Myers Brothers, Leesburg	Loudoun's Foremost Son 164007*	9	418	284
Myers Brothers, Leesburg	Loudoun's Foremost 134981*	6	386	279
M. D. Rhodes, Broadway	Langwater Darnley 100891*	7	326	273
D. C. Sands, Middleburg	Langwater Dariyman 87893	31	419	302
D. C. Sands, Middleburg	Langwater Admirer 168236	18	376	300
D. C. Sands, Middleburg	Atamamsit Conquerer 86107*	22	438	301
Saunders and Myers, Leesburg	Caumsett Polly's Foremost 106864*	21	422	305
Sherwood Forest Farm, Fredericksburg	Beulah's May Royal 149960*	9	416	298
Sherwood Forest Farm, "	Langwater Arrogant 182485*	11	436	302

Table I -cont.

Holsteins

Owner's Name and Address	Name and Number of Sire Proved: No. Daughters: Dam Record Comparisons	Av. B.F. Prod. Per Daughter	Av. No. Days in Record
L. J. Crowgey, Wytheville	Grahamholm Piebe Charmette King (twin) 517106 21	405	303
Curles Neck Farm, Richmond	Curles Posch Colantha Fobes 577637* 8	352	296
Curles Neck Farm, Richmond	Weston Ormsby Drosky 495000* 22	366	295
D. C.Workhouse, Occoquan	Line Colantha Gerben Calamity Rube 626875 9	303	301
Flora Brothers, Rocky Mount	Naffson Homestead Tritomia 644444* 5	237	298
W. E. Flora, Wirtz	Femas Ora DeKol 611286* 6	243	289
Garst Brothers, Roanoke	Garst Buckeye Korndyke 687446* 10	373	296
Greendale Farm, Roanoke	V.P.I. Sensation Javeca Escort 559647* 13	285	290
Greendale Farm, Roanoke	Rosni Veeman Marcedes Vale 529039* 33	311	295
Greendale Farm, Roanoke	V.P.I. Veeman Korndyke France 584694 5	316	293
Greendale Farm, Roanoke	Hollins Hagenbeek 412641* 9	279	292
Greendale Farm, Roanoke	Hollins Haggith 402228* 29	288	286
O. R. Hersh, Manassas	Sir Gerben Colantha Calamity Johan 620940 6	327	299
T. E. Jamison, Buchanan	T.C.P. Merrill 620435 14	325	285
T. E. Jamison, Buchanan	Meadow Farm Artis Ormsby Edward 620179 7	285	285
W. M. Kline, Manassas	Sir Ormsby Gerben Colantha Watson 620941 7	338	303
Middleton Brothers, Herndon	Sir Bess Ormsby Fobes 19th 409529* 13	380	297
Middleton Brothers, Herndon	King Piebe of York Maida Boy 467362* 5	439	320
Middleton Brothers, Herndon	Horsepen Fobes Ormsby Joe 557452 6	335	271
Middleton Brothers, Herndon	V.P.I. Ormsby Korndyke 403382 8	437	305
P. C. Massie, Pulaski	Rosni Korndyke Butter Boy Veeman 583111 16	319	303
P. C. Massie, Pulaski	Nydia Nanette Echo King 511572* 8	372	292
P. C. Massie, Pulaski	Segis Duke Prilly Pontiac 552102* 8	390	304
Miniborye Farm, Richmond	Sir Tulip Gem Matador 517845† 13	305	299
Charles Moyer, Mattoax	V.P.I. Ormsby Buckeye DeKol 417169 28	409	296

Holsteins-cont.

Charles Moyer, Mattoax	Fayne Colantha Johanna 479235	13	424	300
Charles Moyer, Mattoax	Aaggie Pontiac Korndyke Hartog 433562	7	436	305
McComb Brothers, Bluemont	Dutchland Sir Denver the Great 579868	7	303	304
McComb Brothers, Bluemont	U.S.S.H. Claude Segis Piebe 496905*	22	366	296
McComb Brothers, Bluemont	Trehmal Sir Fobes Colantha 547393	33	341	301
F. E. McDonald, Vinton	Winding Way Model Segis Alcartra 510563*	7	275	291
F. E. McDonald, Vinton	Oakton Skylark DeKol 387453*	17	336	290
Overbrook Farm, Round Hill	V.P.I. Bess Burke Ada Chief 504297	5	366	299
W. H. Polly, Hollins	V.P.I. Veeman D.J. Fobes 606127	5	283	286
Roanoke County Coop. Dairy Bull Assn.	Femac Fayne DeKol 625074*	11	292	288
Roanoke County Coop. Dairy Bull Assn. Roanoke	Rosmi Homestead Vale Netherland 497237*	28	318	299
Hugh H. Trout, Hollins	Hollins Hiram 495392*	7	273	293
High H. Trout, Hollins	V.S.D.B. King Gerben Bonheur 495315*	5	307	299
J. O. Beard, Linville	Walkup King Johanna 525164*	19	364	300
J. O. Beard, Linville	V.P.I. Mutual Javoca 574052*	16	344	298

Table I - cont.

Jerseys

Owner's Name and Address	Name and Number of Sire Proved	No. Daughter-Dam Record Comparisons	Av. B. F. Prod. Per Daughter	Av. No. Days in Record
A. E. Curtis, Viewtoen	Phoenix Three Ply Sophieson 344301	6	329	303
T. T. Curtis, Orange	Majesty Sunbriar 25660	17	413	300
R. F. Hill, Jr. Orange	Majesty Premier Owl Tid 333829	13	366	305
L. W. Kipps, Aroda	Prince Tidd Torono Jacob 309973	5	300	302
E. F. Lohr, Uno	Tiny's Spark of Homewood 246523	11	306	299
Montpelier Farm, Montpelier Station	Mary's Pogis of Andrewsia 308842	5	384	291
P. W. Pettit, Roanoke	Pansy's Eminent Nobleman 247728*	7	413	298
J. S. & Paul Roller, Timberville	Over The Top's Ace 261430*	7	475	295
W. W. Sanford, Orange	Princess Pogis of Kenwood 271652*	6	311	303
Shuler Brothers, Summerset	Sophie Torono's Twin Fancy 301379	14	344	302
Fred A. Upicer, Est., Orange	Music Master Little Boy Blue 325524*	7	311	289
Stewart Brothers, Unionville	Sophie Torono Sybil Fauvic Son 301280	15	294	304
M. F. Weaver, Shelby	Ann's Lad of Riverview 222217	5	243	299
M. F. Weaver, Shelby	Carita's Lovely Lad 256371*	28	237	300

*Dead

PROJECT III

Cooperative Work with State Dairy Organizations

This project is composed of those miscellaneous extension activities carried on in cooperation with the different dairy organizations of the state. The prime object of the project is to develop a large, more coordinated dairy improvement program for the state through cooperation and leadership in the dairy promotion programs sponsored by the Virginia dairy breed associations, the Virginia State Dairymen's Association, the Virginia Dairy Products Association, the Virginia Dairy and Food Division, the Virginia Dairy Council, the Virginia State Milk Commission, the Virginia Division of Animal Industry, and other Virginia dairy production, manufacturing and marketing organizations. These organizations represent all the dairy interests of the state as well as the consumers of dairy products, and they are potent factors in the advancing of the dairy industry of the state. These organizations have contributed admirably to the promotion of general dairy extension program and the spirit of mutual cooperation among them is in itself an extension asset which must be guarded and nurtured constantly.

In 1936 the extension dairymen actively participated in the affairs of all state dairy organizations assisting and exerting leadership where necessary to advance the best interests of the entire dairy industry. The results of these activities have been entirely gratifying. Some of the 1936 activities may be listed as follows:

1. As secretary of the Virginia State Dairymen's Association, R. G. Connelly was able to procure valuable support in establishing the ear tagging system, the permanent herd record book system, the means for issuing special deplomas in acknowledgment of note worthy accomplishments among Virginia dairymen, and the leadership and moral support necessary to stimulate growth and development of the "D.H.I.A." and "Dairy Cattle Breeding and Dairy Bull Registry" projects. In addition substantial support was obtained for the establishemtn of a Virginia State Dairy Council, an undertaking undertaken on frequent occasions but really accomplished in 1936.

As a member of the annual Virginia Dairymen's Convention program committee, it has been possible to arrange programs in line with the dairy extension policies of the state. Recognized authorities on dairy subjects were engaged to appear on the program, thus bringing to Virginia new ideas and new points of view on the established dairy extension projects. By careful arrangement, the convention programs have served to coordinate the thinking of the dairy leaders on dairy subjects affecting the state.

2. P. M. Reaves and R. W. Dickson serve as secretaries of the Virginia Holstein-Friesian Club, and the Virginia Jersey Cattle Club, respectively. In this capacity they have been able to advance the several production phases of the extension program. They assumed the responsibility for organizing and developing the programs for the summer field day and the annual winter meeting of each organization. They also were

instrumental in inducing representatives of the National Associations of their respective breeds to send representatives in the state to make extension contacts and promote the dairy extension program among their breeders.

N. H. Williams, County Agricultural Agent of Mecklenburg county served as secretary of the Virginia Guernsey Breeders Association. Through him it was possible for the extension dairyman to work closely with the Guernsey breeders of the state.

A total of 15 meetings were held by the three breed associations in 1936. The programs and general promotion for these meetings were largely prepared and carried on by the secretaries. Approximately 800 people attended the various breed association meetings

3. Definite work was done with the Virginia Dairy Products Association by C. L. Fleshman, with excellent results. Through the joint action of the Virginia State Dairymen's Association and the Virginia Dairy Products Association it was possible to organize and establish the Virginia Dairy Council as an educational agency supported by the Virginia dairy industry. Assistance was also given to the Roanoke Cooperative Milk Producers Association in organizing a Dairy Council in that city. Council work is now conducted in Richmond, Roanoke, Fredericksburg, Charlottesville, Waynesboro, Staunton and Harrisonburg.

Additional cooperation was given the Virginia Dairy Products Association in the organization and promotion of their annual convention program. Mr. Fleshman also helped to get speakers and assisted with the annual ice cream and butter scoring contest.

4. Direct assistance was given the Virginia Dairy and Food Division, the Virginia Division of Animal Industry, and The Virginia State Milk Commission. Milk production cost data were prepared and the extension dairyman appeared at public milk market hearings before the Milk Commission to give testimony on the costs of producing milk. This data and testimony proved effective in obtaining fair price increases for milk producers. Production cost data and testimony were given at 4 market hearings.

Three conferences were held with the Dairy and Food Division officers to unify the present dairy farm inspection service and to standardize the quality control work in line with the best Board of Health requirements. Representatives of both the Virginia Dairymen's Association and the Virginia Dairy Products Association participated jointly in these conferences.

Conferences were held with officials of the Virginia Division of Animal Industry to coordinate policies for the advancement of the Virginia dairy cattle disease control program. Today there is a close cooperative spirit existing between the several dairymen's organizations and the Division of Animal Industry. Work is continuing favorably towards

the eradication of Bang's disease from Virginia herds. With 44 counties definitely signed up under the state Bang's disease eradication program, 31 of these counties have less than 1% infection, 7 other counties have an incidence of infection between 1 and 2 per cent. With the continuation of this program, Virginia is destined to become free from Bang's disease.

In addition to the foregoing activities special work was done with 5 cooperative dairy marketing organizations.

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 committees. In 1936 two courses of procedure were followed in advancing this project. The first course consisted of such activities that tend 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

The 4-H Dairy Club news letter was continued in 1936. We have tried to make this letter interesting and using it to put timely information in the hands of the dairy club members.

The special monthly report cards were furnished to the club members again this year. About 15% of the members returned these cards. It has been rather disappointing that more of the members did not send in their reports. Seems that the only way is to contact the boy and girl once a month and ask it to be filled out and sent in that day. Otherwise they fail to do so in the majority of cases.

Frequent visits to the club members home to see his club animal and to talk over his problems is the best means of stimulating interest on the part of the club member. We have tried to do as much of this as possible in 1936.

The State 4-H Dairy Club Show held in connection with the State Fair is an interest stimulating activity. We had the best quality show this year we have ever had although the number of animals was the smallest in years. This was due to the fact that the rules were strictly enforced as to registration papers being presented and the animals registered in the club member's name. Seventeen club members exhibited 34 animals.

Seven counties participated in the State 4-H Dairy Judging Contest. The Prince William county team won the contest for the second year. Henrico, Prince George, Nottoway, Spottsylvania, Chesterfield, and Dinwiddie ranked in the above order.

The cup offered by the Virginia Holstein-Friesian Club to the county team scoring highest in judging Holsteins was won by Prince William county. This cup has to be won three times before it will become the permananet property of one county. Rockingham county has won it twice, Dinwiddie, Chesterfield, and Prince William each have won it once.

The Holstein-Friesian Association of America, The American Jersey Cattle Club, and the American Guernsey Cattle Club, and the Southern States Cooperative contributed ribbons, medals and other special awards to the club show and judging contest. Many of these premiums were used in connection with the 4-H dairy cattle fitting contest and the 4-H dairy cattle showmanship contest. These two contest were a feature of the regular show ring exhibit.

The State 4-H Short Course is one of the best interest stimulating ideas that has been developed in the state up to this time.

Teaching 4-H Subject Matter

Dairy subject matter is taught the members through monthly meetings. During the summer these meetings are held at the homes of different club members. The parents of the members attend some of these meetings.

Intensive instruction is given the members at the State 4-H Club Short Course. Fifty-five club members enrolled in the 4-H dairy section of the short course in 1936.

The 4-H dairy courses dealt with quality milk production under the following headings: "The principles of determining milk quality"; "The principles of quality milk production"; "Methods of determining milk quality"; and "Judging milk for quality".

Another phase of the course dealt with dairy buildings under the following headings: "Building the right barn for the Herd"; "Milk houses that will pass inspection"; "Sheds for healthy calves"; and "A bull pen for any bull".

A third phase of the course dealt with dairy cattle feeding under the following headings: "Selecting the feeds for dairy needs"; "More and better roughages"; "Feeding the calf to make it grow"; and "Feeding the cows for more milk".

A fourth phase of the course was intensive instruction to about half of the group in "Dairy Cattle Judging".

Table VIII

The Enrollment in Virginia 4-H Dairy Club Work

Project Group	Enrollments by Groups: Boys	Girls	Project Completions by Groups: Boys	Girls	Animals Owned by Groups
Calf	307	52	205	35	282
Heifer	66	6	49	3	67
Cow and Calf	64	9	58	8	101
1936 totals	437	67	310	46	450
1935 totals	369	85	289	62	482
1934 "	321	74	278	64	459
1933 "	349	86	277	69	416
1932 "	429	89	361	79	525
1931 "	489	102	391	85	582
1930 "	467	80	394	73	551

The above table presents a statistical picture of the 4-H Dairy Club enrollment in Virginia. These figures, as reported by the county agents indicate some improvement in 4-H dairy club enrollment over the preceding years. The 356 members that completed their projects owned 450 animals.

PROJECT V

Dairy Manufactures, Dairy Marketing and Consumer Education

Dairy manufactures, as defined in this project, means not only the processes involved in the conversion of the raw products into the many finished dairy products that are made from fluid milk, but it also includes the improvement of the quality of the raw product from the time it leaves the cow intil it reaches the consumer, as well as a sound merchandizing and consumer education program.

Although there is a close correlation, and often an overlapping, in the different lines of work that are necessary for the promotion of a stable dairy industry, there is enough difference to divide the work into the following phases:

1. The consumer education phase
2. The quality improvement phase
3. The dairy products standardization phase
4. Dairy manufacturing and plant management phase
5. Miscellaneous activities phase

Consumer Education Phase

Surveys and estimates place the per capita consumption of milk in Virginia cities at less than one-half pint per day, which is far below the amount of one quart for each child and one pint for each adult, recommended by the leading nutritionists. In view of this great need for an organized consumer educational program to increase milk consumption for the sake of good health, the organization and promotion of Dairy Council work was given major emphasis in this project in 1936.

Since there is a very good possibility of increasing the per capita consumption of fluid milk, which to the dairy industry means increased milk sales, it appears that no greater service could be rendered to the whole industry than to promote a sound consumer educational program on the nutritive qualities of clean, fresh milk.

History of Dairy Council Work in Virginia

In 1931 the Virginia State Dairy Council was organized and began its operations as promoting "Milk Campaigns". It was financed by a voluntary assessment on distributors, dairy products manufacturers, and producers of milk and cream in proportions to the amount of the respective product that was being handled through the contributing plant. The money was pooled and used, more or less indiscriminately, where the promoters thought they would have the best opportunity to show results and get the best reaction.

It was determined early that the procedure was unusual, because some of the members felt that their contributions were being taken from their territory to promote sales in other areas and that they were getting little benefit. It was also soon determined that it cost too much money to conduct a city milk campaign. In other words follow-up work was needed to make the campaign effective, and no provision was made for this work. These causes, coupled with the economic distress of the industry at that time, resulted in the abandonment of the program.

In February 1934 the Dairy Council was organized in Richmond and placed under the direction of Miss Gertrude Drinker. This organization, with no outside connection other than the National Dairy Council, is financed by milk producers and distributors in the Richmond market. Working on a conservative scientific basis, Miss Drinker has been able to develop a very satisfactory health education program. She has progressed to the point where schools and other groups through whom she works, are looking to her for assistance with their programs. The contributors to the work are satisfied and there has been a substantial increase in the consumption of milk on the Richmond market during the past two years.

Virginia State Dairy Council Reorganized

Although a dairy council unit operating on the basis of the Dairy Council in Richmond works very efficiently in a large distributing center, the small city creates a real problem since the expense is too large to employ an educational director for full time work. For that reason it is necessary to group several small cities, conveniently located, into a regional unit under the direction of one worker. The ultimate goal is to combine the regional units, as they are developed, into a state organization under the leadership of a capable supervisor who in turn will be able to direct the policies of the organization.

In an effort to determine sentiment in selected milk markets with regard to organizing a local dairy council unit, a survey was made, December 1935, by holding short conferences with the local milk board members in most of the markets operating under the Milk and Cream Act. These conferences were held in the markets of Fredericksburg, Harrisonburgn Staunton-Waynesboro, Lynchburg, Danville, Petersburg-Hopewell, Suffolk, Norfolk-Portsmouth, and Newport News-Williamsburg. Although the sentiment was favorable in each of these markets, concentrated effort was started in organizing the regional unit comprising the markets of Fredericksburg, Charlottesville, Harrisonburg and Staunton-Waynesboro.

The plan of procedure is to set up a complete local unit in each of these markets as a branch of the Virginia State Dairy Council. Each branch has its own by-laws and the policies are determined by local officers. Each member, whether distributor, producer or producer-

distributor, signs an agreement to contribute a definite amount each month, which is based on the amount of milk sold. Producers and distributors are assessed on the same basis and a producer-distributor is assessed twice as much per 100 pounds of milk sold. The money contributed is spent in the market in which it originates except a small amount which is necessary for maintaining membership in the National Dairy Council.

The local branches are tied in with the state organization through a representative from the executive committee who is a member of theboard of directors of the Virginia State Dairy Council. In addition to the board members representing the local brnaches there is also a representative on the board of directors from each of the two leading state dairy organizations. The local branches are also protected under the charter of the state organization.

The regional unit iscluding the four markets mentioned above was developed and Mrs. Scioto M. Herndon began her duties as educational director September 15. In addition to this branch, considerable work has been done in the Petersburg-Hopewell market toward the development of a local unit. An independent dairy council unit has also been developed in the Roanoke market and has been under the leadership of Miss Myra Reese since August 15.

Work Required During Organization

In addition to supervising much of the work of the now existing dairy council units, the following work was necessary from an extension service standpoint:

28 promotional meetings were held
155 private conferences with producers and distributors in soliciting membership
4 sets of by-laws written for adoption by branch units
1 set of by-laws written for Virginia State Dairy Council
Acted as secretary and kept minutes of all meetings

The Quality Improvement Phase

Although the major part of the quality improvement work has been done on cream and butter in previous years, and it might well be said that there is much need for continued effort along this line, this problem has not received as much attention from an extension standpoint during 1936. This change in procedure might be attributed to several factors, chief of which, was the breaking down of the cream grading

program in most of the cream and butter sections of the state.

From 1926 to 1933 Virginia had an excellent cream grading program. In the spring of 1933, when the price of butterfat was very low, there was a difference of opinion between some of the local manufacturers and out-of-state cream buyers regarding the adjustment of prices to meet this abnormal condition. The grading program was discarded in many sections, and cream was purchased indiscriminately on a flat price. With the exception of a Federal Food and Drug law, as well as a state law, prohibiting the sale of "illegal" cream, there has been very little success in correcting this situation. The result is that the cream producers have been discouraged and the quality of the products have suffered.

With these existing conditions, it was not deemed feasible to hold the usual "producer field days" to discuss quality when there was no incentive, other than pride in the product, to maintain a high standard. Much effort, however, was made through private conferences with leading cream buyers to stimulate interest in paying a price differential. Resulting from these conferences, and from conferences and agreements between cream buyers and station operators themselves, several sectional meetings were held and grading programs have been carried out, usually for short periods, in limited areas. There are a few sections where a very satisfactory grading program is being carried out, and a limited amount of assistance has been given the cream buyers in these sections in pointing out cream defects and furnishing literature for their producers. Probably, the most effective service regarding this phase of the extension project has been the work in cooperation with federal and state inspectors in working out suitable cream filters for the creameries. Practically 100 per cent of the butter manufacturing plants have installed adequate cream filtering equipment during the current year.

One of the major quality problems facing the dairy industry in Virginia is that of the quality of ice cream. There is a definite need for standardization of the raw dairy products and other ingredients going into Virginia ice cream as well as the equipment in which it is manufactured. Although there is no organized project regarding ice cream quality, an especial effort has been made to get the ice cream manufacturers together on a quality program. Here again the quality of ice cream has been discussed privately with individual operators and many definite recommendations made for improvement of the product. Unfortunately Virginia has her share of counter freezers and cut-rate ice cream manufacturing plants, which are often in the hands of operators who are ignorant of a high quality product and are desirous only of getting volume sales.

The quality ice cream contest, a feature of the convention of the Virginia Dairy Products Association, and entirely under the supervision of the extension division and the V.P.I. dairy department,

provides an excellent medium for pointing out the defects in the contestants ice cream. Manufacturers from practically every section of the state submit samples for the contest where they are analyzed for composition and scored by competent judges on the basis of flavor, body and texture, color and package. During this rigid examination defects are apparent that are often overlooked by the manufacturers. These defects are discussed with the manufacturers after the convention, the cause determined if possible, and suggestions made for improvements

Other than with the exceptional producer who might have some specific quality problem regarding fluid milk, there are very few calls for assistance of this nature. Sanitary regulatory work is under the supervision of the Dairy and Food Division inspectors and the city milk inspectors. These agencies, coupled with the rigid requirements of most of the milk distributing plants, corrects any abnormality in quality as soon as it appears. The fluid milk producer is more conscious of quality since his milk is refused at the receiving platform if it is not suitable for bottling purposes.

There is a quality problem, however, among the farmers who are producing milk for manufacturing purposes. Many of the plants buying this type of milk, are grading according to the Methylene Blue test and paying a twenty cent per hundred weight premium for the higher grade. A group of 150 farmers, producing milk for Southern Dairies, Inc., Cambria, were addressed August 17, on problems regarding the production of quality milk as well as the economic importance of getting the higher price. A favorable reaction was obtained. This work was done at the request of J. D. Wysor, county agricultural agent, Montgomery county.

Dairy Products Standardization Phase

The dairy products standardization phase of the manufacturing project is a part of the educational program as well as a personal service. 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. Yeast and mold counts are made on the butter if requested by the creamery.

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, whereby they are 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 term students, or technicians who have been given special training in their own laboratories.

A relatively large percentage of the milk processing and manufacturing plants have installed adequate laboratory equipment for making suitable analyses in their own laboratories. As a result they call upon the extension service only at irregular intervals, and it is reasonable to believe that there will not be as much of this type of work in the future as there has been in the past. It appears however, that a few plants rely on this service as a check on their laboratory analyses, especially when their product is to be shipped out of the state, so that they are sure it is safely within the regulatory standards set up by the Federal Food and Drug Administration.

During the current year, eighty-three samples of dairy products were analyzed. Sixty-three of these samples were ice cream which were analyzed for butterfat and total solids content. Thirteen of this group were also scored for flavor, body and texture, and package. Twelve of the samples analyzed were butter on which a complete analysis was determined by the Kohman method. These butter samples were also scored from a quality standpoint. The remaining eight samples were sour cream and butter samples which were analyzed for butterfat content by the Babcock method.

The following table, No. IX, is a report of the scores and analyses of the ice cream samples submitted for the quality ice cream contest held in conjunction with the twenty-second annual convention of the Virginia Dairy Products Association held in Richmond, January 21-22, 1936. There is a wide difference in the analyses of the samples with no particular correlation between these and the scores. This lack of correlation indicates that other factors, not shown in this table, enter into the scores and criticisms. The quality of the raw products and other ingredients are major factors, but overrun, type and condition of equipment also play an important part. The total solids report on sample No. 5 is of particular interest since the manufacturer was totally unaware that it was below the state legal standard of 35 per cent. Following this report a complete analysis of his manufacturing operations was made. This particular operator is now merchandising a much higher grade product.

The analyses of the other products were general requests of plants and farm dairies on their products. This information was used in a further effort to control the composition of these products and, in the case of farm dairies, to give the producer more information regarding the composition of his product.

TABLE IX

Score and Analyses of Ice Cream Samples

Identification Number	Scores and Criticism of Judges: Flavor	Body & Texture	Color & Package	Total Score	Chief Criticism	Analysis: Per cent Fat	Total Solids
6	45.5	24.5	5	95.0		13.021	37.77
4	45.0	24.0	5	94.0		11.209	35.761
12	45.0	23.5	5	93.5	Weak body	11.880	36.979
10	44.0	24.0	5	93.0	Too sweet	14.478	39.792
7	44.0	23.3	5	92.3	Lack fine flavor - sticky	10.758	36.705
8	42.5	23.5	5	91.0	Too sweet, fluffy	10.815	37.081
1	43.0	22.4	5	90.4	Lacks fine flavor, weak	10.925	37.425
3	42.0	23.0	5	90.0	Acid, condensed, sticky	11.201	37.913
5	41.5	22.5	5.0	89.0	High flavor, weak body	11.459	38.331
11	41.0	23.0	5.0	89.0	Off flavor, not fine, coarse	12.350	37.347
13	41.5	22.5	4.0	88.0	High flavor, coarse, high color	12.229	37.394
9	38.5	22.5	5.0	86.0	Salty, metallic, coarse	14.486	40.720
2	38.0	22.5	5.0	85.5	High acid, coarse, icy	11.883	37.850

Note - Twenty points awarded for bacteria and acidity to other scores to make total score

Dairy Manufacturing Problems and Plant Management Phase

Specialized service and assistance was given to as many dairy manufacturing plants, milk processing plants and farm dairies as was possible. This service was very much diversified in that it included advice on building plans, technical and practical processing problems, and problems dealing with plant operation and 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 to draw new plans for special jobs. Plant problems usually consisted of selection and arrangement of machinery, problems in buttermaking, ice cream making, milk processing, and farm market milk production and distribution.

The following table gives a few of the specific services rendered to plants and diarymen throughout the state, and indicates that this phase of the project is almost entirely a personal service to the plants and farm dairies, and that the work is of a very diversified nature. This type of service, when provided by commercial agencies, is usually very expensive and as a result the plants are very desirous of getting this assistance from the dairy extension service.

An illustration of this phase of direct assistance was the service rendered to the Valley of Virginia Co-Operative Milk Producers Association of Harrisonburg. During the autumn months, when there was a surplus of sweet cream making it necessary to store some of the product for a short period, it was noticed that green "buttons" of mold were attaching themselves to the sides and bottoms of the cans after the cream was held from three to four days. In cooperation with Dr. J. G. Harrar of the V.P.I. Bacteriology Department, the mold was isolated and studied in the laboratory. It was identified as being one of the "penicillium" mold groups although it was developing under very adverse conditions. A survey of the plant processes was made and additional sanitary practices were recommended. Athough the source of this unfavorable condition was not determined, the investigators concluded that it was coming from one or more of the producers and that the organisms were surviving pasteurization. Since between 800 and 900 producers are shipping milk to this plant, it would have been almost an endless task to test the milk of each for this mold. The recommended sanitary procedure and faster moving of the cream appears to have corrected the difficulty.

Table X

Miscellaneous Personal Service

Month	Name of Plant	County	Nature of Work
February	McCrum's Creamery	Rockbridge	Revising ice cream formula for quality improvement
"	Richmond Dairy-Staunton branch	Augusta	Suggested and prepared plans for remodeling plant
"	Evergreen Dairy	Alleghany	" " " " " " "
"	Pedigo's Dairy	Roanoke	Instructed operator, and started operations of new plant
"	Clover Creamery	Roanoke	Advised on method of butter analysis & controlling composition
March	Hudson Produce Co.,	Culpeper	Gave demonstrations on approved methods of making cottage cheese
"	Farmville Creamery	Prince Edward	Corrected ice cream defects resulting from equipment difficulties
"	G. G. Harris	Augusta	Drew plans and recommended equipment for remodeling plant
"	Nansemond Co-Op Dairy	Nansemond	Revised methods of plant management and milk processing
April	Cleveland Dairy Farm	Orange	Drew plans and suggested equipment for remodeling plant
"	Schuyler Larkin	Frederick	Suggested plans for remodeling farm dairy
August	Bridgewater Creamery	Rockingham	Assisted buttermaker with churning procedure and records
September	Valley of Va.Co-Op Milk Prod.	Rockingham	Assisted with quality control problems in handling sweet cream
October	W. W. Woods	Roanoke	Giving butter scoring instructions
November	Early Dawn Co-Op Dairy	Augusta	Submitted tentative plans for new plant

A similar sergice was rendered the Bridgewater Creamery, Bridgewater, after the management requested a check on the churning proceddres, composition control and churning recor ds. After spending two days with the buttermaker it was found that the plant was incurring a considerable loss in making butter that was high in butterfat content than necessary for economical butter manufactures Changes were also made in the neutralizing of the cream so that the quality of the finished butter was improved. Finally a churning record system was worked out that gives the manangement as well as the buttermaker, a complete processing and financial record of each churning.

Another illustration of this nature was in answer to the request of Miss Callie Clark, Cleveland Farm, Orange, Virginia, Miss Clark, a large producer-distributor, had increased her volume of production and sales to the point where her bottling plant and storage room were inadequate for efficient operation. A survey of her conditions was made, and a plant lay-out and equipment furnished. The recommendations which worked in with her farm building plan, was used and a very efficient plant put into operation at a minimum of cost to the operator.

Miscellaneous Activities

R. G. Connelly

Dairy Cattle Judging

In 1936 the judging of dairy cattle was limited to the Shenandoah County Fair, the Virginia State Fair open classes, the Virginia 4-H Dairy Club Show and the students Dairy Show at the Agricultural College. These shows were well attended and the occasions were used to discuss dairy cattle form and practical ways of selecting and developing good dairy cattle. More than 100 people participated in these shows and many spectators witnessed the placings.

Office Calls

About 10 per cent of the time spent in the office was devoted to calls from dairymen, conferences with other extension workers, and discussions with agents from the industry. These calls provided for an exchange of information and also permitted direct advising of dairymen and others with special problems. There were approximately 100 of these conferences during the year.

Publicity Preparation

More than 40 news articles and radio talks were prepared in 1936. These articles were used in the Virginia Extension News, The Southern Planter, the dairy breed journals, and the newspapers of Virginia. Properly prepared dairy news articles have proved quite effective in bringing about changed dairy practice, and the leading newspapers have been generoud with their newspaper space when any articles were submitted. It has proved difficult to find the time to write as much dairy publicity as might be used effectively.

The American Dairy Science Association

As a member of the Sires Committee of the American Dairy Science Association considerable time was spent in colaboreting with other members of the committee in organizing a National sire proving policy and a system of permanent herd records and herd data analysis. One two-day committee conference was held at the American Jersey Cattle Club headquarters in New York City with representatives from Ohio, New York, Vermone, New Jersey and the U. S. Bureau of Dairying, in attendance to coordinate ideas and formulate a standard plan for assembling and analysing genetic data in the proving of dairy bulls. This plan was

submitted before the Extension Section of the American Dairy Science Association at the annual conference at the Pennsylvania State College in June.

Some time was devoted to the preparation of a paper on "Dairy Herd Analysis and Proved Sire Work", which was presented at the American Dairy Science Association meeting. Participation in this out-of-state activity was made possible in part of the substnatial cooperation of the Board of Directors of the Virginia State Dairymen's Association and with their aid some of the essential features of the National Permanent Herd Record System have since been put into effect in Virginia.

The Jackson, Mississippi, Extension Conference

Five days were spent in attending a conference of Southern Agricultural Extension workers at Jackson, Mississippe in February. By means of several panel discussions and subject matter conferences an all-southern dairy extension program was drafted and combined with other subject matter extension programs to form an agricultural program for the south.

This meeting was especially valuable in that it permitted a free exchange of ideas. It gave one an insight into the problems confronting other extension dairymen and a general idea of the methods being used to solve the problems. It also gave one new ideas of how he might do his own work a little better.

Farmers Short Course

Four addresses were prepared and delivered before the annual farmers short course held at V.P.I. in February. Twenty-eight dairy farmers attended this short course, bringing to it as many interesting practical ideas as they took away in new scientific ideas gleaned from dairy research. This short course was as valuable to the instructors as it was to the students, because the students were inclined to dig far below the surface for explanations of the practical problems confronting them on their home farms.

The Institute of Rural Affairs

Three days were given to activities in the annual Institute of Rural Affairs held at V.P.I. in July. One address was delivered on the subject: "The Search for Superior Breeding Stock in Virginia Dairy Herds", before approximately 300 dairy farmers. Numerous conferences and consultations on dairy problems were held during the institute.

4-H Dairy Short Course

Four classes were taught during the 4-H short course at V.P.I. in July. An average of 18 4-H members attended these classes.

Miscellaneous Activities

R. W. Dickson

Dairymen's Convention

Four days were spent in cooperative work with officers of the Virginia State Dairymen's Association during January 1936. Records of all dairy herd improvement association members that had herds averaging 300 pr more pounds of butterfat during the test year of 1935 were tabulated for the banquet program. Cows that were class leaders in the Advanced Registry testing division were also listed in the program.

Judging

Judging at county fairs during 1936 was limited, however, three days were spent in judging dairy cattle exhibits at the Petersburg Fair, the Glad Spring Fair, and the Little International Fair at The Virginia Polytechnic Institute. The judge availed himself of the opportunity presented at the fairs to make each placement a demonstration.

Virginia Dairy Breeds Associations

Each year several days are spent in cooperative work with officers of the three breed associations- Holstein, Jersey, and Guernsey breeders. Service is rendered in preparing programs for meetings and in preparing charts of production record information. Considerable time was spent during the last half of 1936 in acting as secretary-treasurer of the Virginia Jersey Cattle Club.

Cooperation with State Milk Commission

At least five days were required during the year to assemble, calculate, and tabulate detail milk production cost account reports for the Roanoke, Harrisonburg, and Staunton milk sheds. These reports were made to the State Milk Commission upon request.

4-H Club Short Course

Four half days were required during 1936 in teaching advanced judging to 48 4-H dairy club boys and girls. It was necessary to give considerable detail instruction in judging dairy cattle because many

of the club members had had very little or no previous judging work.

Cow Testers Short Course

Annual short courses are given each year by the Dairy Husbandry Department of The Virginia Polytechnic Institute for cow testers in order that there will be at all times qualified candidates for positions as dairy herd improvement association supervisors. Six days were spent during 1936 in teaching dairy herd improvement association record work to members of the short course.

Office Calls

About 5 per cent of the time spent in the office was given to personal calls from dairymen, county agents, dairy herd improvement association supervisors, and others desiring specific dairy information. There were approximately 75 such calls during the year.

Cattle Sales and Pedigree Service

Cooperative work was extended the Guernsey Breeders Association in advertising and promoting the State Guernsey sale that was held in Richmond in October 1936. At least two specific recommendations were made to dairymen concerning animals which they contemplated purchasing. Personal service was given dairymen in preparing and criticising extended pedigrees on at least 50 animals.

Publicity

One policy of the dairy herd improvement association project is to report monthly to the members and other dairymen timely news information of the testing work. During the year at least 2,000 D.H.I.A. news letters were sent to dairymen of the state.

Monthly Honor Roll reports were sent to 100 Virginia dairymen interested in Advanced Registry testing.

Miscellaneous Activities

R. P. Keithly

Virginia State Dairymen's Association and Dairy Products Association

Fourteen days were spent in assisting with preliminary arrangements for the annual conventions of the Dairymen's Association and Dairy Products Association. Special assistance was given the local program committee, exhibits committee, and entertainment committee. In addition direct assistance was given to the erection and supervision of educational exhibits furnished by the U. S. Department of Agriculture.

Dairy Breed Associations

Six days were spent in cooperation with the officers of the three Virginia dairy breed associations in organizing their programs for the summer field days and annual winter meetings. All meetings were well attended.

Also colaborated with Guernsey breeders in the promotion of their state sale in October. Fifty-six Guernseys were sold at an average price of $368.00 per head.

Fairs

In addition to supervising the Virginia 4-H dairy club show at Richmond, time was taken to judge dairy cattle at eight county and community fairs in Accomac, Chesterfield, Mecklenburg, Nottoway, Prince William, Richmond, Russell, and Wythe counties.

American Dairy Science Association

Six days were spent attending the annual meeting of the American Dairy Science Association held at the Pennsylvania State College in June. Served on the Exhibits Committee, preparing an exhibit for Virginia and sending out 20 letters soliciting extension exhibits from other states.

Cooperation with U.S.D.A.

Three days were spent with Mr. C. J. Stauber from the Beltsville Experiment Station of the Bureau of Dairying, U.S.D.A., in visiting breeders in Virginia who are cooperating with the U.S. Department, also prospective cooperators.

Institute of Rural Affairs

Worked with the entertainment committee in arranging and putting on a party and dance of the visitors at the Institute of Rural Affairs held in Blacksburg in July.

Virginia Bull Improvement Registry and Pedigrees

Sixty-one three generation pedigrees were worked up on bulls entered in the Bull Registry by the Virginia dairymen in 1936. Thirty-eight bulls were proved and 25 partially proved. These bulls were proved on the lifetime lactation records of the daughters and the lifetime lactation records of the dams of these daughters. This called for a great deal of field work and office work in compiling and listing these records.

The greatest difficulty we have in this project is to properly identify the cattle. We have assisted several dairymen through the cooperation of the D.H.I.A. testers in starting an ear tagging system that will identify all cattle in the future.

Miscellaneous Activities

P. M. Reaves

Dairy Cattle Feeding and Breeding Schools

Assistance was given in conducting five dairy cattle feeding and breeding schools. These were either one-day or two-day meetings where the fundamentals of dairy feeding and breeding were discussed. Specific problems of the dairymen present were discussed and plans presented as ways of improving their practices and getting the most from their herds. These schools were held in Prince William, Fairfax, Smyth, and Roanoke counties.

Various Dairy Meetings

Various dairy meetings were attended. These were addressed, work done on committees or a part taken in the discussion. These meetings include the Virginia Dairymen's Association convention, the Virginia Dairy Products Association convention, three meetings with the Roanoke County Dairymens meeting, Mirador dispersal sale, Loudoun county dairy meeting, Riner dairymens meeting and the American Dairy Science Association meeting.

State Dairy Breed Clubs

Considerable time was devoted throughout the year to work with the state breed clubs. As secretary of the Virgihia Holstein-Friesian Club, arrangements were made for programs and other details for the annual winter meeting and summer field day. About two weeks were spent with the fieldman of the National Association; seventy farm visits were made and nine section meetings with Holstein breeders. Also, three breeding schools were arranged in cooperation with the associations fieldmen. A great deal of correspondence was carried on for the club.

The Virginia Jersey Cattle Club's field day was attended.

Responsibility for much of the details for the field day of the Virginia Guernsey breeders association was assumed. About two weeks were spent with officers of the state club and with their southern fieldmen. This time was spent in farm visits, meetings and conferences.

Farmers Institute and 4-H Dairy Club

A dairy cattle exhibit was arranged for the farmers institute, showing the progress in breeding dairy cattle for the three breeds, Guernsey, Holstein, and Jersey in the college herd. The dairy section of the farmers institute was addressed and given a demonstration.

Subject matter discussions, field trips and demonstrations were given for the 4-H dairy short course at Blacksburg. The annual extension conference was attended.

Judging Contests and Shows

A judging contest was affiliated in for Southside Virginia F. F. A. with 140 taking part in the judging. Assistance was given in the judging contest at one of the breed club's field days. Dairy cattle were judged at one county fair.

Virginia Dairy Bull Registry - Herd Records - Herd Registrations

Some time was spent in field work in compiling records for use in proving bulls entered in the Virginia Dairy Bull Registry. Assistance was given several dairymen in keeping a herd record book and a few were aided in registering their cattle.

Office

Correspondence was a means of answering inquiries of dairymen, largely consisting of specific information requested by them. This included dairy rations for dairymen, feed dealers and feed manufacturers, pedigrees of purebred dairy cattle, etc.

During the year six radio talks were prepared and given. Some articles for publicity were written.

Some time was spent in departmental conferences, and also conferences with dairymen, commercial men, fieldman and others who call at the office.

Miscellaneous Activities

C. L. Fleshman

Virginia Dairy Products Association

More assistance than ever before was given to the activities of the Virginia Dairy Products Association. As publicity agent for the organization, all meetings were attended and all activities of general interest were reported to the leading dairy journals. This publicity has resulted in a wider out-of-state acquaintance with the activities of the association and has tended to create a greater appreciation, on the part of outside readers, for the dairy industry in Virginia.

Considerable time was devoted to the association's annual convention, which was held in Richmond, in the preparation of the program, securing suitable speakers, and particularly in conducting a quality ice cream contest. This contest has become a permanent feature of the convention and the V.P.I. Dairy Department and Extension Division are expected to conduct the program and further its educational purposes.

Dairy Manufactures Short Course

Most of the month of February, was devoted to instruction work in the butter and ice cream short courses at the college. These courses are designed to give up-to-date information to men who have had practical experience in dairy manufacturing plants although inexperienced men may attend. This instruction work brings about a closer relationship between the manufacturing plants, since it provides for future contact with the students. It is also a medium through which additional men can be trained for advancement in plant work. This feature has been particularly important during the current year since there has been a shortage of men and several requests to the Extension Department for trained workers could not be filled. Ten students attended these courses, eight from Virginia plants, one from Kentucky and one from the United States Department of Agriculture.

4-H Club Short Course

Four lectures were given to an average class of 20 4-H club students during the 4-H club short course which was held in July. These lectures dealt with quality milk production and quality control tests and were designed primarily to be of benefit to those students living on farms on which milk is produced for sale to a distributing plant.

Out of State Meetings and Conventions

Four days were spent in attending the annual meeting of the American Dairy Science Association which was held at the Pennsylvania State College, State College, Pa. This meeting provided a good opportunity to become acquainted with current research that is being developed for the benefit of the dairy industry and at the same time provide a wider acquaintance with men in other agricultural colleges.

One association meeting was also attended in Atlantic City during Dairy Convention Week, as a member of the market milk committee of the manufacturing section which is appointed to study and make recommendations for a uniform program of quality improvement in market milk.

The week of October 12 was spent attending the International Conventions of Milk Dealers and Ice Cream Manufacturers, and the Dairy Industries Exposition at Atlantic City. Ideas obtained during the attendance at these meetings and the opportunity of observing the improvement in dairy equipment, has been of inestimable value in giving advice to dairymen and plant operators regarding the installation of equipment and in arranging programs for future development of a rapidly changing industry.

Publicity

The "Virginia Dairy Industry Bulletin" is prepared at irregular intervals, approximately once a month, and mailed to all the manufacturing plants and several of the dairy industry journals. This bulletin is intended to keep the plant operators informed of recent developments in the dairy industry of the state, and also to call to their attention seasonal and timely ideas that are of advantage to the efficient operation of their plants.

A regular publicity program is maintained with the leading dairy journals in furnishing news items originating from the V.P.I. Dairy Department, Extension Dvision and state dairy agencies, that are of interest to out-of-state as well as Virginia readers. Such publicity has been furnished regularly to eight journals.

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

Office Conferences

About five per cent of the office time was given to personal conferences from dairymen, plant operators, and representatives of state dairy organizations. These visitors were either seeking dairy information or assisting in the arrangement of dairy educational programs.

Distribution of Dairy Council Literature

Dairy council literature, particularly suitable for use in school rooms, has been provided by contributions from the Virginia Dairy Products Association and the Virginia State Dairymen's Association, for use in answer to requests which are received at the dairy extension office. About 85 requests of this type have been answered during the year which represents approximately 2200 pieces of literature. The teachers are anxious to get this material which is designed to fit into their teaching curriculum. Its use is of a distinct advantage to the dairy industry since it tends to increase consumption and sales of milk.

Cooperation With Other Dairy Organizations

Conferences are 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 that of the Extension Division. Each of these organizations has worked in close harmony with the others during the current year, to the mutual advantage of each agency.

The 1937 Dairy Outlook For Virginia

The General Dairy Situation

The immediate dairy outlook is improved. The gradually increasing consumer purchasing power is stimulating greater milk and dairy products consumption. Reduced dairy cattle numbers, a general shortage of feeds, and a decided improvement in competing lines of agriculture have brought dairy production more in accord with consumer demand.

The longtime dairy outlook is much more favorable than the immediate outlook. Although the prices of dairy products, particularly butter, have changed with the general price level, the purchasing power of butterfat on the farm is relatively low. Milk and butterfat prices will average low in relation to feeds, and to the prices of other classes of livestock at least until a more normal feed supply is available. Under the existing prices of feeds and dairy products there is little incentive for farmers to market their present feed supply in the form of milk and dairy products. If the 1937 harvest is more nearly average the prices of feeds will probably decline in relation to dairy products. The prices of hogs and beef cattle on the other hand will probably continue relatively high in relation to butterfat for several years, thus tending to discourage dairy production, particularly in the corn belt.

The existing domestic and foreign price relationship for butter and cheese has stimulated the imports of both of these commodities. It is probable that these imports will continue to exceed those of recent years until the 1937 pasture season stimulates domestic milk production. These importantions and the enormously increased production of oleomargarine and other butter substitutes will retard and limit the upward swing of butter prices and thereby affect all dairy commodity prices.

Dairy Production Conditions

The Feed Supply: One of the principal factors affecting the Virginia, as well as the National dairy outlook, is the feed shortage and the effect it has has upon the feed price-dairy price ratio. The total domestic supply of feed grains that can be utilized in the current 18 month period is only 87,000,000 tons as compared to a yearly average of more than 100,000,000 tons for the years 1923-1932. Grain supplies are low in nearly all the states, including Virginia. Imports of foreign grain are tending to reduce grain concentrate prices in coastal states, but will not reduce the national shortage appreciably. Under the existing grain concentrate costs and the prices received for whole milk, dairymen will be inclined to reduce the grain ration thereby curtailing milk production.

The national shortage of hay is not so serious as the shortage of feed grains although in certain limited areas of Virginia the forage shortage is critical some farms producing less than fifty per cent of the forage needed during the current feeding season. There was a rather heavy summer feeding of hay because of poor pastures and by the end of November some dairymen were obliged to buy hay, straw, and fodder for forage. Although late fall pasture relieved the situation in some sections, nevertheless it will be necessary to feed straw and stover rather carefully to carry some herds through the winter.

With average weather conditions the dairyman can build up his depleted stocks of homegrown grain and hay in 1937; but several years will be required to recoup his herd due to the liquidation of cattle imposed upon him by the feed shortage. The supply of grain and hay per head of livestock, if the 1937 growing season is normal, will probably be ample and milk cows will probably be fed grain liberally as long as prices of dairy products are favorable.

Although pastures were not up to normal in some parts of Virginia, during the 1936 grazing season, some pastures deteriorated to a low level because of over-grazing. In view of the present land conservation policies, a more extensive pasture acreage is in prospect with a strong tendency towards better pasture management. As a matter of production economy, as well as better land management, it is anticipated that dairymen will depend more upon pasture and other homegrown roughages. It is possible that dairymen with large acreages will increase the size of their herds to maintain a normal, but less expensive flow of milk on a roughage feeding program. The trend seems to be towards the production of milk by feeding more home grown roughages and less grain concentrates.

The Dairy Cattle Population: The number of milk cows on farms has decreased continuously since 1933 and the prospects are that by the first of the year milk cow numbers for the country will be down to 25,200,000, or lower than in any January since 1932. Slaughter of cows, heifers and calves under Federal inspection continues heavy and the feed shortage will probably cause further herd culling until the pasture season starts. Since milk cow prices are low compared to other livestock prices, it is not likely that farmers will save any more heifer calves than are necessary to replace the cows culled from the herd, until there is a supply of cheaper feed available and the price of dairy cattle has increased. Such conditions are not expected to develop before late in 1937 or 1938, and it will probably be sometime in 1939 before any appreciable increase in milking cow numbers will be evident. The number of milking cows per hundred of human population is not smaller than in any year since 1931, and during the next several years the rate of population growth seems likely to exceed the rate at which the number of milk cows will increase.

The decreased number of milking cows; the increased demand for dairy products; and the favorable outlook for beef prices will probably bring about a price increase for dairy cows that will extend over several years, and dairymen who have raised a sufficient number of herd replacements should be able to dispose of their old cows at good prices.

Trends in Milk Production: The present competition for the available feed supplies is close. In some of the important butter producing states of the mid west, where hog prices are high compared with butterfat prices, the feed shortage may cause a considerable decline in milk production. Even though both milk and feed prices have increased in most market milk areas, dairymen have fed rather heavily to maintain production. To what extent the production will be reduced this winter, however, will depend upon the relation of dairy prices and feed prices, and also on how the returns from milk cows compare with current or prospective returns from other classes of livestock. Milk production per cow this winter and early spring will probably average below that of the producing year, but somewhat higher than in the same period of 1934-35, if the winter continues mild.

Utilization of Milk and Consumption of Dairy Products: Fluid milk consumption declined 6 per cent in the towns and cities during the depression 1930-1934. This decline has been halted and preliminary tabulations indicate a 3 per cent increase in 1935 over 1934. Consumption in 1936 probably increased further. Virginia cities show an increase of 4 to 10 per cent in fluid milk consumption in 1936 over 1935. The first 7 months of 1936 the total receipts of milk, cream and fresh condensed milk at Boston, New York, and Philadelphia exceeded those of the same period in 1935 by 3.3 per cent.

The longtime outlook is for an upward trend in consumption of fluid milk and cream in cities and villages.

With prospects for further improvement in employment and pay rolls, the outlook for the next several years is for a larger production and consumption of ice cream. Ice cream production increased sharply in 1934 and 1935 and has practically doubled in Virginia since 1932. Preliminary tabulations indicate that the 1936 gallonage for the entire ice cream industry will exceed the 1932 output by 62 per cent, which will practically equal the peak year of 1929.

The production of evaporated milk during the first 7 months of 1936 was approximately equal to the high production for the same period in 1933. Consumption of evaporated milk increased greatly during the depression. Production and consumption will probably be relatively high this winter, with fair prospects for a continuation of the upward trend during 1937.

Cheese production and consumption continued to increase during the first 7 months of 1936, production increasing 13 per cent and consumption increasing 11 per cent over 1935. The probable short supplies of meats will tend to maintain a relatively high demand for cheese. Both the production and consumption of cheese will probably continue high compared to other recent years.

Creamery butter production declined sharply in 1936 in the United States due to the drought. Production during the first 7 months of 1936 was 3.0 per cent less than the corresponding period of 1935, while

consumption of creamery butter declined one per cent during the same period. With greater demands for fluid milk, ice cream and cheese and a lower milk production, the prospects are that creamery butter production will decline still further this winter. The great increase in the consumption of butter substitutes has tended to limit price advances for butter and has usurped some of the market for butter. The total production of manufactured dairy products (milk equivalent basis) during this year is expected to be relatively low.

Storage Holdings of Dairy Products

The storage stocks of manufactured dairy products are low and the outlook for relatively low production indicates that total domestic supply will be below the level of recent years. Storage holdings of dairy products at the usual peak period of September 1, were 32 per cent less than the large stocks on September 1, 1935 and 21 per cent below the 1925-30 average.

Dairy Prices and Markets

The longtime outlook for dairy prices is favorable. If feed crop production is normal in 1937 and the years following, feed prices will probably decline in relation to dairy products. Farm prices of dairy products will probably average higher in relation to taxes, interest, and prices of manufactured products dairymen buy, than in recent years.

Changes in butter prices are closely related to changes in the general level of prices of basic commodities, which are promarily raw materials. Butter prices rose during the first 8 months of 1936 until the ratio of butter prices to other commodities was 91 per cent of pre-war. A further rise in butter prices in relation to the general level of basic commodities is anticipated. This rise will probably accompany further increases in the purchasing power of consumers.

Prices for fluid milk have advanced in Virginia cities in general accord with the costs of production, as provided for under the Virginia milk control law. Up to November 29th, milk producers supplying 11 of Virginia's 20 state-controlled markets were receiving an average of 43 cents more per hundred pounds of milk, as the result of price increases authorized in recent months. The advances ranged from 25 cents per hundred pounds in Norfolk to 60 cents per hundred pounds in Fredericksburg.

The latest price changes were as follows: Norfolk, $3.25 to $3.50; Newport News-Williamsburg, $3.15 to $3.50; Roanoke $2.75 to $3.20; Danville, $3.00 to $3.45; Harrisonburg, $2.25 to $2.70; Fredericksburg, $2.70 to $3.30; Petersburg-Hopewell, $3.15 to $3.30; Covington-Clifton Forge, $2.85 to $3.25; Staunton-Waynesboro, $2.50 to $2.90; Lynchburg, $2.75 to $3.20. Further upward adjustments may be made in these markets upon petition if mounting production costs demand.

Recommendations for Virginia

1. In view of the transition through which dairying is passing, all adjustments in herd management should be made only after careful deliberation on the need for, as well as the kind of adjustment to be made, and the eventful effect upon the particular dairy business. In time of economic change the dairyman should proceed with caution in making the adjustments that must be made.

2. Since there is a distinct disparity in the exchange value of milk and dairy products, and feed grains which is not likely to extend beyond the next harvest season all grain feeding should be in strict accordance with the individual cows ability to convert the grain into milk profitably. During this period of narrow dairy profit margin, the keeping of daily milk production weights for each cow and the accurate adjustment of the grain feeding to the individual cow's production requirements at ten-day intervals are likely to prove profitable.

3. In periods of feed shortage it may be necessary to cull the herd in order to adjust the herd to the feed supply. In such emergencies, unartificial culling should be avoided. Good cows, sold in a temporary emergency, may be extremely hard to replace even at a high price two or three years hence, when the dairyman may sorely need them either for milk production or the perpetuation of desirable traits through breeding.

4. Although current feed costs are high it is probably a temporary condition that should not deter the established dairyman from raising his own herd replacements. Expensive feed, however, should not be wasted on calves of questionable breeding or productive inheritance.

5. Since grain concentrates are usually expensive and since grain prices are affected by conditions over which the individual dairyman has little or no control, Virginia dairymen are likely to find it more profitable to place increased reliance upon good quality home-raised legume hays, pasture and corn silage than upon grain concentrates for their dairy rations.

6. Membership in the Cooperative Dairy Herd Improvement Association is likely to prove a good investment, particularly in furnishing up-to-date production cost information on individual cows and on the herd as a basis for quick and effective herd adjustments. Any effect to cull the herd, to adjust the feeding program, and to improve the herd through breeding should be founded on a system of continuous record keeping to be really effective.

7. A dairymen's income is limited in the longrun by the inherent ability of his cows to convert good home raised feed into milk. It is doubtful if a dairyman will realize much net profit from his feed and labor unless he keeps cows capable of producing 350 pounds of butterfat

annually under Virginia farm conditions. Such cows can best be obtained by selective breeding and the building up and those genetic qualities essential to profitable milk production. The adoption of the Virginia Dairy Bull Registry program administered in conjunction with the dairy herd improvement association project will afford an economical means for breeding up a dairy herd.

8. With the existing narrow margin between feed and milk prices, dairymen will do well to keep close account of crop production costs, as well as the efficiency of the herd. Forage crops, grains, and pasture produced at excessive cost are not likely to return much profit no matter how efficient the herd may be. Dairy market prices are likely to remain too low to allow much profit on high milk production costs.

9. Cream production holds some promise of profit to the farmer providing he can maintain an average production of 7,500 pounds of milk and 300 pounds of butterfat in his herd; raise all the good quality roughage his herd requires; keep enough cows to justify cream deliveries at least twice each week; maintain quality in the cream; and finally, keep enough hogs and poultry to consume all the skim milk profitably on the farm.

10. High quality and fair prices are the best production for home markets. Dairymen will do well to guard their markets against outside competition by producing high quality milk and cream, that will be in preferential demand in all Virginia markets.

Contemplated Assistance Needed from the U. S. Department of Agriculture

Dr. J. C. McDowell, Dr. J. K. Kendrick and other members of the Division of Dairy Herd Improvement Investigations in the United States Bureau of Dairying have assisted greatly through the tabulation, summarization, and analysis of Virginia D.H.I.A. records, in extending the usefulness and benefits of cooperative dairy herd record work in Virginia. This service has been prompt and of a high order, providing a dependable basis on which to make specialized studies of dairying in Virginia. It is hoped that this fine cooperation will continue, since it is one form of assistance which tends record keeping and sound dairy herd management.

The Virginia dairy extension service will continue to look to the Division of Dairy Herd Improvement Investigations for all the necessary herd record forms which have been provided in past years, and will invite their counsel and advice on the new problems which will develop in the Virginia dairy herd record project.

Mr. W. E. Wintermeyer collaborated closely with the Virginia dairy extension service in 1936 on the development of extension methods and plans of procedure. Specific advice, based upon wide contacts with dairy extension men in the south, has been an invaluable contribution to the Virginia dairy extension program. It is hoped that this same cooperation will be forthcoming in 1937 in the interest of a better coordinated and more effective Virginia dairy extension program.

Mr. C. J. Steuber, Mr. M. H. Fohrman and other members of the United States Dairy Experiment Station staff at Beltsville, Maryland cooperated closely in promoting the Virginia dairy cattle breeding project. They have leased highly bred young bulls to selected dairymen, they have addressed dairy meetings on the subjects of breeding and better herd management methods, and they have given liberally of their time in entertaining Virginia dairy tours at the Beltsville Experiment Station. All these contributions to Virginia dairy extension effort has had an excellent effect. Dairy practices have been improved on many farms particularly with regard to record keeping and breeding as a result of contacts made with members of the United States Dairy Experiment Station staff. This assistance is very valuable to the Virginia dairy extension service and it is hoped that the same cooperation will be extended in the future.

Each year there is a need for well planned dairy exhibits as educational features of the Virginia State Dairy Convention. In the past Mr. J. H. Hiscox, Chief, and the other members of the Bureau of Exhibits, U.S.D.A., have cooperated closely in selecting and furnishing appropriate dairy exhibits. These exhibits have proved valuable in drawing attention to improved dairy husbandry methods. Further assistance with dairy exhibits in 1937 will be asked of the U. S. Bureau of Exhibits.

It is difficult to foretell what dairy educational and demonstrational material may be needed in 1937. But as the projects are developed and the needs become apparent, the service of W. H. Wintermeyer will be sought in selecting and procuring the available educational and demonstrational material which may be needed.

PUBLICITY EXHIBITS

COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF VIRGINIA

VIRGINIA AGRICULTURAL AND MECHANICAL COLLEGE AND POLYTECHNIC INSTITUTE AND UNITED STATES DEPARTMENT OF AGRICULTURE, COOPERATING

EXTENSION SERVICE

Dairy Herd Improvement Monthly News Letter
September 1936

Total number of active associations during September ---------- 24
Number of associations reporting for September ---------- 24
Number of cows in these 24 associations ---------- 1,3098
Number of Honor Roll cows in these 24 associations ---------- 1,786
Number of cows reported culled in these 24 associations ---------- 227

Association	Tester	No. cows	Honor Roll cows	Association Average* # milk	Association Average* # fat
Albemarle	G.E.Benton	378	50	529	20.7
Amelia-P. E.	J.A.Moyer	449	47	---	----
Augusta-Rockbridge	H.W.Irvine	487	17	456	19.1
Botetourt	J.G.Thomas	400	42	628	24.3
Chesterfield	J.D.Land	97	29	675	32.7
Culpeper	Earl Hawkins	897	76	569	25.2
Fairfax #1	M. F. Smith,	660	172	769	30.9
Fairfax #2	W.G.Merritt	651	68	609	23.8
Fauquier	J.P.Porter	668	45	531	22.6
Fredericksburg	J.D.Land	199	45	641	30.8
Henrico	C.W.Yocum	1404	239	684	27.5
Loudoun #1	H.D.Sprague	996	180	645	27.5
Loudoun #2	L.K.Martin	993	135	630	27.4
Madison	J.K.Porter	348	46	598	25.1
Norfolk	J. C.Cole	573	100	653	28.0
Orange	J.K.Porter	571	110	603	27.4
Peninsula	J.D.Land	227	35	612	26.8
Prince William	W.J.Hunnicutt	777	78	605	23.8
Pulaski-Montgomery	F.W.Meador	362	34	498	21.5
Roanoke-Franklin	A.H.Myers	941	124	661	23.9
Shenandoah	H.C. Jackson	244	26	541	24.5
Washington-Smyth	F.W.Meador	301	57	671	27.9
Southampton	G.E.Benton	206	32	700	27.8
August #2	H.C.Jackson	233	14	519	23.5
Individual herd	R.F.Hill	57	6	389	22.6
Total production of milk abd butterfat ----------				8082632	3347217
Average monthly production per cow in all associations				617	25.5

*Total production of association divided by the total number of cows in associations.

Five High Herds in Milk Production in September

Name of Owner	Address	No.Cows	Breed	Lbs. Milk
R. T. Harrison	Herndon	32	H.& G.	1052
L. J. Crowgey	Wythewille	22	R.H.	1008
Sweet Briar College	Sweet Briar	57	G.H.	978
Mobjack Farm	Mathews	24	R.G.	975
R. S. Hynson	Manassas	36	G.H.&G.	949
Hollins College	Hollins	34	R.H.	949

Five High Herds In Butterfat Production in September

Name of Owner	Address	No.Cows	Breed	Lbs. B.F.
Mobjack Farm	Mathews	24	R.G.	45.9
Endless Caverns	New Market	11	B.S.	44.4
R. T. Harrison	Herndon	32	H.&G.	43.3
R. S. Hynson	Manassas	36	G.H.&G.	39.7
Sherwood Forest Farm	Fredericksburg	29	R.G.	39.2

High Herd in Each Association for September

Association	Owner	No.Cows	Breed	Average Production	
				#Milk	#Fat
Albemarle	A.E.McMurdo	18	R.H.&G.J.	831	30.2
Amelia-Prince Ed.	Palmer & Havens	29	R.G.	663	33.2
Augusta-Rockbridge	W. W. Tromble	18	G.G.	559	29.5
Botetourt	D. C. Woody	18	R.H.	891	32.2
Chesterfield	Otto Civil	56	R.G.	701	33.2
Culpeper	A. E. Curtis	28	G.J.	725	35.8
Fairfax #1	R. T. Harrison	32	H.&G.	1052	43.3
Fairfax #2	C. T. Rice	33	Mix	786	32.8
	Mrs. E. M. Ulfelder	20	Mix	862	32.8
Fauquier	W. R. Rowland	16	R.G.	729	38.2
Fredericksburg	Sherwood Forest F,	29	R.G.	834	39.2
Henrico	A.Mistr & Sons	65	G	732	35.9
Loudoun #1	Hillandale Farm	59	G.G.	790	36.9
Loudoun #2	J. R. Clemens	21	Mix	740	32.5
Madison	Greenway Farm	22	R.&G.H.&J.	838	34.0
Norfolk*Princess A.	Jake Hershberger	16	G.G.	791	37.9
Orange	S.A.Carpenter	25	R.&G.H.&J.	711	33.9
Peninsula	Mobjack Farm	24	R.G.	975	45.9
Prince William	R.S.Hynson	36	G.H.&G.	949	39.7
Pulaski-Montgomery	C. B. Morgan	21	G.G.&H.	626	29.6
Roanoke-Franklin	Odd Fellows Home	-	R & G.G.	696	35.8
Shenandoah	Endless Caverns	11	B.S.	802	44.4
Washington-Smyth	L.J. Crowgey	82	R.H.	1008	35.9
Southampton	E. A. Bradshaw	95	R.&G.H.	786	29.9
Augusta#2	F.K. Koiner	33	G.G.	594	27.8

High Cow In Each Association

Association	Name of Owner	Breed	Lbs. B.F.
Albemarle	Blue Ridge Sanitorium	R.J.	71.1
Amelia-Prince Edward	Chas. Moyer	R.H.	69.8
Augusta- Rockbridge	M. M. McComb	R.G.	48.0
Botetourt	A. H. Henderson	G.H.	59.8
Chesterfield	Otto Civil	R.G.	54.9
Culpeper	Beauregard Stock Farm	G.H.	72.0
Fairfax #1	Ravensworth Farm	---	74.1
Fairfax #2	O. T. Wright	G.J.	67.7
Fauquier	Mint Brook Farm	G.H.	65.5
Fredericksburg	W. S. Dickinson	----	65.5
Henrico	Curles Neck Farm	G.H.	83.4
Loudoun #1	Hillandale Farm	G.G.	68.4
Loudoun #2	Mrs. J. F. Kincaid	G.G.	70.6
Madison	F. S. Walker	R.H.	62.0
Norfolk	----------	----	----
Orange	Montpelier Farm	R.J.	65.7

Peninsula	Mobjack Farm	R.G.	61.3
Prince William	R. S. Hynson	----	77.3
Pulaski-Montgomery	C. B. Morgan	----	57.5
Roanoke-Franklin	Sweet Briar College	G.H.	66.2
Shenandoah	Endless Caverns	B.S.	78.1
Washington-Smyth	B. R. Harr	----	77.4
Southampton	E. A. Bradshaw	G.H.	64.5
Augusta #2	A. E. Houff	G.H.	57.6

Dairy Cattle Breeding Pays Good Dividends in Virginia

As an example of how careful attention to breeding and testing of cows for production may be turned to profit, even in a depression, was well illustrated in the recent 4th Annual Virginia Guernsey Breeders Association Consignment Sale. A total of 56 cows, heifers and bulls were sold, averaging approximately $368.00 per animal. Those animals, having parents and grandparents with good production records in the Advanced Registry, sold 181 per cent higher on the average than those animals lacking such evidence of breeding and performance. Twenty-one animals sired either of good A. R. sires or by young sons of good A. R. sires, and whose dams had good A. R. records, sold at an average price of $623.00, while the animals lacking this type of record information averaged $215.00 per animal. From this wide difference in the sale price of these cattle, it appears that the value of the dairy herd can be increased through a good Advanced Registry testing program. Many of the higher selling animals referred to above were born and developed during the depression.

Virginia State Dairymen's Association

The thirtieth annual convention of The Virginia State Dairymen's Association will be held January 14 and 15, 1937, in Roanoke, Virginia. Headquarters of the convention will be at Hotel Roanoke.

R. W. Dickson
Asst. Ext. Dairyman
In charge of D.H.I.A.

RWD/JR

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

Blacksburg, Virginia,
January 10, 1936

VIRGINIA DAIRY INDUSTRY BULLETIN NO. IV

Annual Convention of Virginia Dairy Products Association

The twenty-second annual convention of the Virginia Dairy Products Association will be held in Richmond, January 21 and 22 with headquarters at the John Marshall Hotel. A strong program has been arranged with nationally known authroities discussing present day problems in ice cream, market milk and butter as they relate to the industry in general.

"Dairy Council Work" by Miss Gertrude Drinker of the Richmond Dairy Countil, will be the opening address at the first general session of the convention. Following this address Stuart Agnew, chairman, State Milk Commission, will speak on the subject, "What Has the Milk Control Law of Virginia Done for Producers and Distributors". A discussion of this address will be led by D. E. Shank, general manager, Valley of Virginia Milk Producers Association, Harrisonburg.

Robert C. Hibben, executive secretary, International Association of Ice Cream Manufacturers, will address the convention on "Merchandising Ice Cream", which will be followed by a talk on some phase of the ice cream industry by E. J. Mather, president, Southern Dairies, Inc., Washington, D. C.

The general session of January 22 will begin with an announcement of the results of the quality ice cream contest. Professor C. W. Holdaway, head, dairy department, V.P.I. will lead a discussion on the analysis of the ice cream exhibit. Following this presentation, Professor Holdaway will speak on "Cream Improvement"; discussion will be led by C. L. Stahl, secretary, Virginia Dairy Products Association. In connection with cream improvement, Roy C. Potts, chief marketing dairy specialist, U. S. Bureau of Agricultural Economics, Washington, D. C. will address the convention on the subject of "Butter". The general session will be concluded by an address on "What the Dairy and Food Division Is Doing to Improve Dairy Conditions" by S. S.Smith, Dairy and Food Division, Richmond. Following this there will be a business meeting of the association members to formulate new policies for the coming year.

The annual banquet and entertainment will begin at seven o'clock, January 22, the entertainment to be furnished by the Cavaliers, an association of dairy supply men.

One of the features of the convention will be the educational ice cream exhibit and contest. Each manufacturer has been asked to send a gallon sample of his commercial ice cream to the Richmond convention. Prizes will be awarded and each exhibitor will obtain an official report of the analysis and scoring of his sample, and a comparison of it with samples exhibited by other manufacturers.

Vanilla has been selected as the flavor for the ice cream for this contest. The samples are to be shipped in paper ice cream cans, furnished by the Menasha Products Company of Richmond, to the laboratory of the Richmond Dairy Company where they will be given a code number and analyzed for fat and total solids by a member of the Ice Cream Contest Committee. Samples, arriving later then 10:00 a.m. Sunday morning, January 19 will not be included in the contest.

Ice Cream, Butter Short Course

Dairy Manufacturing short courses for buttermakers and ice cream makers are announced by the dairy department at V.P.I. The buttermaking course will be held February 3 to 12. This will be followed by the course in ice cream manufacturing, February 12 to 22. These courses are designed primarily to give up-to-date methods of dairy practices to men who have had previous experience in dairy manufacturing plants. Inexperienced men, however, may also enroll. Students may enroll in one or both of these courses.

Each course is divided into lectures and practical laboratory work in actual manufacturing processes. Such phases as ice cream mix computation, actual operation of machinery and laboratory control methods will receive special attention.

An opportunity to attend special illustrated lectures by speakers who are connected with the industry in the state will be extended to both the buttermakers and ice cream makers on February 12.

Further information regarding the short courses may be obtained by writing to the Dairy Department, V.P.I.

Dairy Council Work Under Consideration for Virginia

Mr. R. W. Balderson, secretary, National Dairy Council, Chicago, Ill., will meet with the joint committee of the Virginia Dairy Products Association and the Virginia Dairymen's Association on January 23, 1936, to give consideration to the report of a survey on the feasibility of conducting dairy council work in the various Virginia cities. Preliminary conferences have already been held to work out plans for the organization of dairy council work on a state-wide basis.

Cooperative Milk Distributing Plant at Suffolk

The Nansemond Cooperative Dairy, Inc., Suffolk, began operations November 21, 1935, with W. A. Phillips as general manager. Seven members formerly producer-distributors of raw milk, formed the cooperative organization through which they now process and distribute the milk produced on their own farms as well as milk purchased from other producers. Only recently has pasturized milk been offered to the consumers in Suffolk.

C. Lee Fleshman
Asst. Dairy Specialist.

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

The Virginia 4-H Dairy Club Letter
February 1936

Dear 4-H Dairy Club Member:

This is our first 1936 dairy club letter to you. We hope you will like it. We are very anxious to make our letters as interesting as possible. Naturally, we want you to write us occasionally to tell us what you think of our letters and also to tell us about your 4-H dairy project and the other interesting things you are doing. In this way we can help each other. You help us to make our letter more interesting and valuable to you; and we will help you to make your project more instructive and profitable.

We are working hard to make 1936 a Banner 4-H Dairy Club Year, and we want you to help us. What do you say; will you go with us on the proposition? Of course you will, because you know you will have plenty of fun and will get a lot of benefit from your work if you are an active 4-H dairy club member.

Each club member will get out of his project just what he puts into it. We ask, therefore, that you send to the Dairy Extension Office, V.P.I., Blacksburg, the record report on your project each month along with any 4-H dairy news which will be interesting. Then see what we can do for you.

Each month we plan to include two Honor Rolls in our letter. One will be called "The Virginia 4-H Dairy Production Honor Roll" and will be reserved for those 4-H dairy club members who report to the Dairy Extension Office at V.P.I., the monthly production records on their 4-H cows; the other will be "The Virginia 4-H Record Keeping Honor Roll", which will be reserved for all 4-H dairy club members who report to the Dairy Extension Office at V.P.I., the feed consumption and feed cost records on their club animals, whether the animals are calves, heifers or cows.

The Honor Rolls will be listed each month as followed:

THE VIRGINIA 4-H DAIRY PRODUCTION HONOR ROLL
FOR THE MONTH OF JANUARY
Requirements: 1000 lbs. of milk or 40 lbs. of butterfat for the month

No Production Honor Roll records were reported in January, but we certainly would like to list your name and the name of your club cow as the first to be reported. How About It?

Even though your club cow doesn't make the Production Honor Roll, send all her monthly records in anyway. You'll be pleasantly surprised how the records will count up for you by the end of the year.

THE VIRGINIA 4-H DAIRY RECORD KEEPING HONOR ROLL
FOR THE MONTH OF JANUARY

Requirements: All monthly 4-H dairy records on each animal must be in the Dairy Extension Office, V.P.I., on or before the 10th of each month

Members Name	No. Records	Members Name	No. Records
	Dinwiddie County		
Wm. Howard Ford	1		
	Roanoke County		
Louis Garst	1	Keith Cook	3
	Princess Anne County		
Theodora Dolla Valla	1	Edward Tate	1
Marion Dozier	1	Stanley Hudgins	1
Earnest Kereke	1		

These eight 4-H dairy club members have started their 1936 records promptly. Who will be the first from your county to send in monthoy 4-H dairy records? Send the record cards for February so that we receive them on or before March 10.

Barn Yard Gossip

Will a 4-H Heifer Get Thin on Pasture

Early pasture contains such a large amount of water in proportion to its dry matter that we must be very careful when we turn heifers out because it is liable to cause digestive disturbances, thus giving the heifer a set back in growth. When turned on pasture, the heifers should be allowed to graze about one hour the first day and longer on succeeding days, so as to make the change from winter feeding conditions to pasture feeding gradually. If you give your heifer a good feeding of hay before turning on pasture it will help prevent digestive disturbances.

Good pastures in May and June will usually furnish enough nutrients for the heifer. But early pasture and late dry pasture usually do not furnish enough dry matter for growth. In this case they should be fed some dry roughage, soiling crops, or low protein grain to keep them growing normally. An under-developed heifer never makes as profitable a cow as a well-developed heifer. If you wish to avoid a lot of trouble with your calves, do not put them on pasture until they are at least six months old. A young calf, with its small undeveloped stomach cannot eat enough grass to keep it growing normally.

Lice and Calves Can't Thrive Together

Lice are a serious pest and if present in large numbers will sap the calf's vitality and prevent growth. The hair and skin will be in an unthrifty condition; often patches of hair will be rubbed off the neck or body. Lice, as a rule, do not bother cattle much in spring and summer; but when cattle are closely housed during the fall and winter, lice may cause considerable damage.

Probably the most efficient treatment is a thorough soaking of all parts of the animal's body with a 2% solution of coal tar dip. This will kill practically all the lice present but may not destroy the eggs, so the treatment should be repeated in about 10 days. This method should not be used in cold weather unless the calf can be put in a warm place and rubbed dry.

Regular treatments with a good commercial louse powder will control lice fairly well. A good brushing about egery two weeks with linseed oil will control lice farily well in cold weather, but the cattle must be kept warm and should not be exposed to direct sunlight immediately after the linseed oil treatment.

Good places to look for lice on club animals is around the neck and shoulders and aroung the tail setting.

4-H Dairy Club Boys at V.P.I.

We want to watch our 4-H dairy club members that are now attending V.P.I. In a great many instances their 4-H dairy club project has helped them in paying their expenses at college. Some of them now attending are - Philip Reading and Egbert Thompson, Prince William county; W. S. Dickinson, Jr., Spottsylvania county; W. A. Quick, Jr., Augusta county; George Stoneman, Henrico county; and Raleigh Sandy, Rockinghmm county.

Please don't forget to send in your records, as we want to make 1936 a banner year.

Yours very truly,

R. P. Keithly

R. P. Keithly,
Assistant Extension Dairyman
In charge of 4-H Dairy Club work.

RPK/JR

Reasons Why Continuous Testing Pays

There are numerous advantages why a continuous testing program pays; however, the following reasons are the most important:

1. Records are a guide in breeding. Testing or proving the sire is as important as testing the herd. It is a slow process, but it is speeded up through continuous testing.

2. Culling inefficient producers can be done accurately through a continuous testing program. Cows vary in production from year to year. A cow that made a fair record this year may not make a good record next year, in which case the owner should perhaps dispose of her.

3. Selection of future animals for the herd depends on lifetime records. Through continuous testing dairymen can maintain for future herd use these animals that have the maternal inheritance for a long life of high milk and butterfat production.

4. Records show the cows that are profitable from year to year. Since feed and milk prices vary from year to year, it is important to have monthly cost of production figures on each cow. Under a favorable feed-milk price ration, low producing cows may be profitable; however, if the price ratio is not favorable during the following year, the same cow may be unprofitable.

5. Each cow should receive feed in proportion to her milk and butterfat production. Without a regular monthly check-up on each cow in the herd, it is difficult to do a good job of feeding. Even though every animal in a herd isa high producer, she should be fed according to the milk and butterfat produced.

6. Purebred animals out of untested cows are continually coming into herds. Records on these animals will give an appraisal of their producing ability.

7. The tester's services discover sources of loss through inefficiency.

8. Records seem to put enthusiasm into dairying. A sound testing program increases the income of a dairy herd, and plays an important part in maintaining the interest of the entire family.

Test, Don't Guess.—R. W. Dickson, Asst. Ext. Dairyman, In charge of D. H. I. A.

Virginia Permanent Herd Record Book

Members of the Virginia Dairy Herd Improvement Associations will be interested to learn that, through the joint action of the V. P. I. Dairy Extension Service, the Virginia State Dairymen's Association, and the U. S. Bureau of Dairying, a supply of loose leaf, permanent herd record books have been provided for free distribution to Virginia D. H. I. A. members who will make good use of them.

The books consist of a rather attractive blue-gray, stiff, canvas-back, three-ring-binder, and sufficient filler pages to accommodate any D. H. I. A. herd. The pages are so arranged that any dairyman can keep in very simple form all the essential record information for each of his herd sires on a single sheet, so that all the identification, breeding, and proof facts may be kept in a practical, orderly fashion. Likewise, an individual cow record sheet is provided for each cow in the herd so that the D. H. I. A. member can keep the identification, health records, graphic account of freshening dates, breeding dates, lactation and dry period; also production and reproduction records on each cow.

The simplicity of these books makes it possible for any D. H. I. A. member to keep a set of private records that will enable him to systematize his breeding, culling and other herd management activities on a sound basis. Each D. H. I. A. supervisor has been provided with a sample copy of the book and each D. H. I. A. member is urged to examine the book at his first opportunity. All orders should be directed to the Extension Dairyman at V. P. I., through the D. H. I. A. supervisor or county agent, giving the number of sires and cows in the herd. Any additional loose leaves needed for the binder in the future will be supplied without cost to the dairyman.

THE 1936 U. S. DEPARTMENT OF AGRICULTURE YEAR BOOK

Any dairyman interested in a thorough discussion of plant and animal breeding in their practical and research phases should get a copy of the 1936 U. S. Department of Agriculture Year Book.

Each Congressman has a limited supply of year books for free distribution, but the U. S. Government Printing Office, Washington, D. C., will supply the books at cost.

The book gives accounts of the genetic laws which govern inheritance, traces the development of breeding in many plants and animals, and gives the results of the germ plasm survey conducted among many dairy herds of the country last fall. Included in the 142-page discussion of dairy cattle breeding is the analysis of ten Virginia dairy herds in which three or more proved sires have been developed. This is a valuable book for anyone interested in plant and animal breeding.—R. W. Dickson, Asst. Ext. Dairyman, in charge of D. H. I. A.

Legume Hay, Summer Crop, Boost to Winter Dairying

Roughage Gives Cow Chance To Produce Better Milk And More of It; Now Is Time to Plan for Crop

By R. G. CONNELLY
Extension Dairyman, V. P. I.

Both the winter milk production and the net profits from Virginia dairy herds are greatly affected by the type, quality and quantity of the hay fed. Contrary to the thought of certain individuals, the roughage—especially the hay—phase of the cow's ration is the most important part of the ration from the standpoint of the nutrition and production of the cow as well as the dairyman's net income.

According to the yearly production and cost records on Virginia dairy herd improvement association herds the most income above feed costs is usually found in those herds fed high quality, home-raised legume hays along with corn silage during winter. In most instances the cows consume more of the high quality hay, but the increased hay consumption is attended by a substantial decrease in the amount of expensive grain concentrates necessary to maintain a uniformly high level of milk production.

Hay Is 70 Per Cent

It has been practically demonstrated that high producing cows will produce 70 per cent of their possible production on roughage alone, if the roughage consists of good quality legume hay and corn silage fed in liberal amounts. The other 30 per cent of the possible production will depend upon the grain concentrates fed.

Since hay is an essential and very important part of the dairy ration it is not too early to plan now to harvest the quality of hay that will make economical milk production next winter. It should be recognized that the real feed value of sound sweet hay varies largely according to the degree of leafiness in the case of legumes and the percentage of green color and foreign material in the case of all kinds of hay.

In fact leafiness, color and foreign material content are the three main factors on which any roughage should judged for its true feeding value. Barring weather conditions these three factors are largely under the dairyman's control.

Green for Vitamins

From two-thirds to three-fourths of the protein of legume plants is found in the leaves, and if the leaves carry a high degree of green color one may be assured that they are high in vitamin potency, a very important feed attribute in quality milk production. Since the time of cutting and methods of curing directly influence the degree of leafiness in the case of alfalfa, it is important that the forage crop be cut at the right stage to get the minimum percentage of leaves and cured in a rather tough condition to keep the loss of leaves at a minimum, when harvested. It is usually best to cut alfalfa when one-fourth to one-third of the plant are in bloom, or better still when the new crown shoots are about one inch long.

The natural green color in hay usually indicates good curing, aroma, palatability, freedom from weather damage, and a relatively high carotene content or vitmain potency, all of which are extremely important in stimulating feed consumption and high production efficiency in the dairy herd. The conditions and methods under which hay is harvested determine its color to a large extent.

Sun Hurts It Some

Although it is best to cure the hay with a minimum exposure to direct sunlight, slight sun bleach, or the grap colors arising from moderate seating, do not affect the feed value nearly so much as rain damage, excessive weathing, and excessive fermentation evidenced by dark grown discolorations. From the standpoint of preserving color too much hay should not be cut down at one time during the period of hay making so that it will be in the swath unduly exposed to the sun and weather. Many dairymen have found that the use of a side delivery rake enables them to cure their hay quite satisfactory in the window and with the aid of a hay loader, they can put the hay under cover quickly and at the right stage of curing.

It is obvious that the finer stem and the greater the leafiness the better will be the aulity of the hay, providing it is green and free of foreign material. If the hay contains a large percentage of weeds, stubble and other waste material, its feeding value is reduced proportionately and may be almost worthless for dairy cattle depending upon the type of foreign material present. These physical characteristics—leafiness, color, foreign material content—are the most accurate and definite measures for judging the feeding value of hay.

BOONE MILL HERD HIGH FOR MONTH

Dairy Association Cows Average 701 Pounds of Milk During January

During the month of January there were 647 cows tested in 31 herds of the Roanoke-Franklin Dairy Herd Improvement association, revealing an average production of the total number of cows of 701 pounds of milk and 25.57 pounds of butterfat per cow for the month.

The herd of 16 grade Holsteins owned by C. J. Clingenpeel and Son of Boone Mill were high in butterfat production for the month, averaging 1,096 pounds of milk and 33.84 pounds of butterfat per cow for the month. The high cow in butterfat production for January was a grade Holstein owned by P. C. Huff, giving 1,773 pounds of milk and 87.3 pounds of butterfat. A grade Holstein of Greendale Farms was a very close second, producing 1,975 pounds of milk and 83 pounds of butterfat.

Other Leaders.

The five high herds headed by the Clingenpeel herd included those of W. M. Garst, Roanoke, of 25 cows, with an average butterfat production of 32.77 pounds each; the Sweet Briar College herd of 58, which produced an average of 32.63 pounds of butterfat each; the Greendale Farms herd, Roanoke, of 65, producing an average of 30.53 pounds of butterfat each; and the Dr. Thomas K. Terrell herd of 51, with an average production of 30.51 pounds of butterfat each.

Among the ten high cows for January, there were five of them belonging to Greendale Farms and three to P. C. Huff. Including the two highest, the list of the ten high ones follows: a second grade Holstein of P. C. Huff, 1,930 pounds of milk and 71.7 pounds of butterfat; a second grade Holstein of Greendale Farms, 1,972 pounds of milk and 69.2 pounds of butterfat; a third grade Holstein of P. C. Huff, 1,804 pounds of milk and 68.2 pounds of butterfat; a third grade Holstein of Greendale Farms, 1,909 pounds of milk and 64.1 pounds of butterfat; a grade Jersey of W. M. Garst, Roanoke, 1,326 pounds of milk and 62.8 pounds of butterfat; a fourth grade Holstein of Greendale Farms, 1,720 pounds of milk and 62.3 pounds of butterfat; and a fifth grade Holstein of Greendale Farms, 1,655 pounds of milk and 61.3 pounds of butterfat; and a grade Guernsey of the Odd Fellows Home, Lynchburg, 1,187 pounds of milk and 60.5 pounds of butterfat.

Have One Big Producer.

Herds having one or more cows producing 50 or more pounds of butterfat during the month of January were as follows: W. M. Garst herd of 25, four 50-pound producers; J. A. Naff and Son, Boone Mill, herd of 21, three; Greendale Farms herd of 65, seven; Odd Fellows Home herd of 18, two; Sweet Briar College herd of 58, five; Hollins College herd of 35, three; D. W. Richards, Salem, herd of 12, one; W. H. Polley, Hollins, herd of 19, one; O. L. Bowman, Boone Mill, herd of 14, one; R. T. Flora and Son, Boone Mill, herd of 13, one; C. J. Clingenpeel and Son, Boone Mill, herd of 16, one; Summerdean Farms, Hollins, herd of 40, two; P. C. Huff herd of 83, four; Dr. Thomas K. Terrell herd of 51, two; F. E. McDonald, Vinton, herd of 26, one; Baptist Orphanage, Salem, herd of 29, one; and Mrs. William Watts, Roanoke, herd of 33, one.

In December the herd of 33 belonging to Mrs. Watts had one 50-pound producer in it for that month and the fact was inadvertently omitted from the report at that time.

Adequate Herd Replacements Big Problem

Cows of Inferior Size Cost Virginia Outside Trade

R. G. CONNELLY
Extension Dairyman, V. P. I.

The future profitableness of any Virginia dairy herd depends largely upon the kind of calves raised today. Axiomatic as this assertion may appear, nevertheless it is one principle of dairy husbandry which is frequently overlooked in Virginia. Until greater consideration is given to the raising of superior herd replacements, no dairyman can hope to build up and perpetuate the type of productiveness which is necessary for profit under the present system of dairying.

Lack of body size is perhaps the most common criticism aimed at Virginia dairy cattle by out-of-state buyers. Whether this criticism can be generally applied to all herds of the state or limited to just a few herds is of minor importance in so far as the welfare of the whole Virginia dairy industry is concerned. The fact remains that there are herds of undersized cattle in Virginia sufficient to have a stigmatic influence on the industry as a whole.

Undersize Cuts Price

Any dairyman who has attempted to sell the surplus stock from his herd knows from bitter experience how undersized and poor body condition will deflate dairy cattle prices. Lack of size and poor physical conditions serve as the bludgeons with which cattle buyers beat down cattle values and maintain low dairy cattle exchange levels for the whole state.

From the individual dairyman's standpoint stunted herd replacements are a poor risk in maintaining a uniformly high annual milk flow. The analysis of dairy herd improvement association records throughout the United States during a long period of years show conclusively that the larger the cow within a given herd, the greater will be her milk producing ability. A large feed consuming capacity strong constitutional vigor, and a capacious mammiary system along with a strong inherent ability to secrete milk are the cardinal qualities any successful breeder looks for in a dairy cow. They are the cardinal qualities any rang and file dairyman should develop in his cattle through selection, breedin and feeding.

Many Factors Have a Bearing On Growth of Milk Stock

Factors Affecting Growth

Little study is needed to show how stunted dairy cattle may decrease the inventory value of the individual value of the individual dairy herd and thereby deflate cattle values generally in the community. Our problem in Virginia is to utilize economically the many natural agricultural conditions which are favorable to the growth and development of superior dairy cattle, both to meet domestic needs and an ever growing out-of-state market demand. Some Virginia dairy cattle breeders, have already put themselves into an excellent dairy cattle marketing position, and from general observations it appears that this remunerative field is wide open for others who are able to breed and develop good quality dairy cattle.

In meeting the growing demand for better dairy cattle both as replacements in our own herds and as a marketable surplus for sale elsewhere, it would be well to consider briefly some of the prerequisites of growing large cattle. Growth and development of any animal is a complicated process, but in general we know from observation that growth and development are influenced first by internal body factors and second by external factors. Both groups of growth factors may be greatly influenced by the dairyman.

Long-Time Planning Is Seen As Aid In Dairying Problem

Noted Authorities to Speak Before Virginians on Troubles and Their cures; Richmond to Welcome Visitors

"A little knowledge is a dangerous thing," is the time-tested advice of Mr. Pope, which has its modern applications.

Any seasonal dairyman knows well enough that one cannot get by on just an ordinary knowledge of dairying, if he hopes to meet the exacting fluid milk requirements of most markets. Consequently we see developing a go-out-and-get-it type of dairymen who will successfully meet most dairy conditions that develop.

These are the dairymen we see exchanging ideas with each other at our state meetings, or with chance acquaintances along the road, or with neighbors over the line fence. These are likely to be Richmond, on January 23 and 24, the same dairymen who will be alert to grasp the many new and beneficial ideas that will be presented at the Annual Virginia Dairyman's Convention.

Although it is not possible here of the convention program, never-to present a detailed elaboration thelem we can call attention to some of the important features of the convention—the things with which every Dairyman must eventually become acquainted if he hopes to continues as a dairyman.

Planning a Necessity

In the first place, if the dairy industry in Virginia is to capitalize its better experiences of the past few years and attain greater, better goals of service and satisfaction for everyone, then some rather definite long-time planning must be done. It is the purpose therefore of this Virginia Dairymen's Convention to consider as a general

(Continued on page seven)

Virginia Dairymen To Plan Long-Time Progress Program

Sale of Surplus Stock to Hindered. Noted Authorities to Talk Before Virginians in Richmond at Convention, Jan. 22-24

(Continued from Page One)

theme: "Some Long-Time Policies for Improving Virginia Dairying."

It is hoped Virginia Dairymen have not endured the depression in vain. In other words: "Should Virginia dairying in the future be developed according to an economic plan based upon experience or should the haphazard trial and error method of bygone years be followed to the lasting detriment of everyone who milks cows for a living?" This is a question worth keeping in mind if you attend the convention.

Breeding and Conservation

It is quite obvious that all phases of the dairying industry cannot be adequately considered in a two-day convention. The convention program committee is convinced, however, that rather definite consideration should be given during the convention to dairy cattle breeding, land conservation and utilization, and the realtion of state agencies to the dairy industry of Virginia.

This committee—S. R. Carter, chairman, Ashland; L. M. Walker, Richmond; Kone Brugh, Fincastle; D. M. Chichester, Falmouth; C. Nelson Beck, Charlottesville and R. G. Connelly, Blacksburg—therefore has prepared an interesting program which will tend to answer the questions: "What shall be the long-time policy in developing Virginia dairy herds?" "What should be our land conservation and utilization policies on Virginia dairy farms?" and "What should be the regulatory policies of a state government in promoting a prosperous dairy industry?"

These questions have long been uppermost in the minds of many Virginia dairymen who have contempated the long-time perspectivetive of dairy development in the commonwealth. But these questions have not yet been answered from an individual, to a state and national responsibility. "What stand" we might ask, "should Virginia dairymen take on this important problem?"

Lyman Carrier, Director of the Virginia Land Conservation Program, will address the convention at 1:15 p. m., January 23 on the subject, "What should be our land policy on Virginia farms?" Mr. Carrier has long been identified with the agronomical phase of agriculture. Through his foresight and influence has come improvement in farm land management and farm crops in Virginia and many other states. Virginia dairymen can look forward to an up-to-the-minute account of land conservation accomplishments in Virginia.

Hear Pasture Expert

Professor C. B. Bender who has conducted extensive experiments over a long period of years at the New Jersey Agricultural Experiment Station on methods of handling dairy pastures for the best growth in young stock and the greatest milk yield from cows, will address the convention following Mr. Carrier. Most dairymen recognize the importance of good pasture in producing milk economically, but to what extent and by what methods can dairymen improve their pastures for still greater economy of production, is an ever present question.

These are questions which Professor Bender is well qualified to discuss in the light of many years experience with both intensive and extensive types of pasture manage-

ment. From this address will come suggestions with regard to conserving and utilizing land profitably on dairy farms.

Professor T. B. Hutcheson, head of the Agronomy Departmnet at V. P. I., will lead the discussion in the open forum on "What should be our land conservation and utilization policies on Virginia dairy farms?" Here again the dairymen attending the convention will have an opportunity to participate in a discussion which should lead to a better understanding of the problems which originate in the land and its management.

State Regulation

Friday morning, January 24 will be devoted largely to two very important addresses on the theme: "The Regulatory Policies of the State Government that promote prosperous dairying." O. E. Van Cleave, Commissioner of Agriculture for the State of Tennessee, will address the convention at 9:00 a. m., on the subject, "State Regulatory measures that can help the Dairy industry."

Since many measures have been put into effect to bring about stability and confidence in the dairy industry, it appears that Mr. Van Cleave will have a particular timeworthy topic for discussion. Mr. Van Cleave was originally a dairyman and also the Southern Representative of the American Jersey Cattle Club. With this wealth of experience, we may anticipate a rather thorough-going presentation of the dairyman's problems from the state official's point of view.

Co-operation and Control

A. H. Lauterbach, general manager of the Interstate Milk Producer's Association of Philadelphia and formerly chief of the dairy section under the agricultural Adjustment Administration will address the convention on the subject, "Co-operatives and Control."

Mr. Lauterbach, long an organizer of dairy co-operatives in the West, as well as an official in co-operative organizations, has wielded great influence in correcting the difficulties which have beset dairy co-operatives. From this address Virginia dairymen should get both the inside and the outside point of view with regard to the life and function of dairy co-operatives. If you are a dairyman, be prepared to enter the open forum on Mr. Van Cleave's and Mr. Lauterbach's addresses. Local opinion has its effect upon local policies.

Immediately following the convention program there will be a short business session of the Virginia State Dairymen's Association under the direction of President Chichester. At this time the varous committee reports will be heard and acted upon. These standing committees — (Legislative, Disease Control, Dairy Markets and Standards, and Dairy Breeds Relations Committees) — will consider and report on the several phases of the convention, making recommendations and outlinging the policies which the Virginia State Dairymen's Association may wish to follow.

Banquet on Thursday

In addition to the foregoing program the Virginia Dairymen will hold their annual banquet in the John Marshall Hotel, Thursday night, January 23. The convention entertainment is carefully organizing a program of entertainment which will appeal to every dairyman.

The three Virginia dairy breeds association will hold their annual winter meetings, Friday afternoon. The Virginia Guernsey Breeders Association will meet at the call of T. Benton Gayle, president. C. Nelson Beck, president of the Virginia Holstein-Treslan Club, will preside at the annual Holstein meeting. Wheatley M. Johnson, president of the Virginia Jersey Cattle Club, will have charge of the annual Virginia Jersey breeders meeting.

The breed associations will start their meetings with luncheons at the John Marshall Hotel and the officers of each association will conduct the program for the particular breed meeting. O. E. Van Cleave will be the guest speaker at the meeting of the Virginia Jersey Cattle club.

Improvement Authority

With authoritative speakers to address the convention, it is planned, time permitting, to hold an open forum on the particular subject following each speaker's address to permit full exchange of ideas among the assembled dairymen. Dr. E. E. Heiser, Dairy Cattle Geneticist from Ohio State University and who is in charge of the National Holstein Breeding Program sponsored by the Holstein-Friesan Association of America, will address the convention at 10 a. m., January 23, on the subject "Developing a State Dairy Herd Improvement Program."

Dr. Heiser is a real authority on the subject of dairy herd improvement and has built up a national reputation for his ability to take the mystery out of cattle breeding. It is neither an over-statement nor an unfounded prognostication to state that Dr. Heiser will bring new thought to every Virginia dairyman who is constantly confronted with the age-old problem of breeding up more profitable cattle.

In this address we may anticipate a simple, practical address on some of the most important factors which are keeping some Virginia dairymen from succeeding. Every dairyman, regardless of his breed affiliation, should plan to participate in the open forum following Dr. Heiser's address.

Farm Deterioration

Virginia has its share of farms which are producing pasture, hay and silage enough to sustain a profitable dairy herd. Regretable as the present situation is, many of these farms grow less productive as time passes. The challenge which these farms present to Virginia dairymen and to every farmer is "Why do these farms deteriorate so rapidly and what should we do to stop it?" Decreased acre productivity we all know, is lost wealth to the individual. It is also a great loss to the commonwealth. This problem of protecting the farms for posterity is rapidly changing

VIRGINIA AGRICULTURAL AND MECHANICAL COLLEGE AND POLYTECHNIC INSTITUTE AND U. S. DEPARTMENT OF AGRICULTURE, Co-operating.
EXTENSION DIVISION, JNO. R. HUTCHESON, DIRECTOR, BLACKSBURG, VIRGINIA

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MIDDLE PLANTATION WOMEN HOLD SUCCESSFUL EXHIBIT

Handicrafts Net $200 At Williamsburg

Miss Mabel Massey of James City county makes the following interesting report of the county exhibit of handicrafts held in her county:

"The chairman of the James City county advisory board, at a meeting June 24, 1935, presented a plan for an arts and crafts exhibit in Williamsburg in the fall. Having acted as senior visitor under the Virginia emergency relief administration, she appreciated the necessity of developing some work whereby the people of the county and town could add small amounts to their income. Hundsen Cary, who is interested in handicrafts, was asked to tell us what he knew of the handicrafts in other lands.

"The following plan was employed. Each of the six clubs represented on the board planned and held an exhibit in its own club house in the early fall. A judging committee, trained by the county home demonstration agent, composed of one representative from each club attended all the club preliminary exhibits and marked all articles they deemed worthy of being sent to the Middle Plantation art and handicraft exhibit. There were 624 entries.

"The final, or county exhibit, was held November 8 and 9 in Williamsburg. The use of a store was granted us by Williamsburg Restoration Incorporated. The local papers gave the project hearty support and printed thirty-three articles about the work. *The Daily Press* of Newport News sent a photographer to the final exhibit to take photographs for the Sunday issue.

"A trained decorator volunteered her services in placing the exhibit and, since she had visited the seven club exhibits and knew what she might expect as entries at Williamsburg, planned a beautiful display.

"One-third of all the members of the clubs represented on the advisory board made entries and a number of the 4-H club members were also represented. Seventy-five adults and four children who were not members of any organizations had entries accepted. The exhibit was open 18 hours and netted the exhibitors $123.51. When the orders taken are filled this amount will run over $200. The expenses were $24.50. When all sales are completed and the books closed, the advisory board will probably have fifty dollars to its credit. It is impossible to make an accurate statement regarding finances now, as we are still placing orders.

"There is a decided sentiment in favor of a similar exhibit in the spring and plans for such a sale are being talked of by all concerned. The exhibits gave a point of contact to all club members which they thoroughly enjoyed along with spectators and customers. A student at the College of William and Mary exhibited some wood carving. Now two people are trying to make arrangements with him for lessons and he can well use the funds. A physician in Williamsburg wishes to organize the wood workers in the town and county in a guild so they can profit by ideas from instructors sent out by the Craftsman's Guild."

FACTORY WORKERS' EARNINGS KEEP PACE WITH FOOD PRICES

Dr. L. H. Bean
Economic Adviser of the AAA

During the past eight years, earnings per worker employed in factories have fluctuated with changes in the level of retail food prices. They fell nearly 40 percent between 1928 and the early part of 1933. Food prices also fell 40 percent. Earnings per employed worker advanced nearly 38 percent between March, 1933 and August, 1935, and food prices have also advanced 38 percent. The average employed factory worker has been able, as a result of this close correspondence between his earnings and the cost of his food bill, to buy as much food during every year of this depression, including 1933, 1934, and 1935, as he could in 1928. In fact, a closer examination of the facts shows that food prices have been somewhat lower during the years 1931-1935 in relation to 1928 prices than were earnings per employed person, so that actually the average earnings in every one of the past five years have had a purchasing power in terms of food at retail prices somewhat greater than in 1928. In August, 1935, retail food prices were 80 percent of their 1928 level while earnings per employed person were 83 percent of their 1928 level, indicating that the average factory worker could buy about 3 percent more food than in 1928.

The food prices referred to here are those of the Bureau of Labor Statistics and, of course, include the relatively high prices of meats due largely to the 1934 drought, as well as to the relatively low prices of fruits, vegetables, dairy products and other foods.

In contrast to the average worker's ability during the course of the depression and recovery since 1931 to buy as much or more food with his earnings than he could in 1928, is the fact that his living costs other than foods did not decline in step with his reduced earnings. By the spring of 1933 when his earnings were down nearly 40 percent and food prices were down 40 percent, other living costs were down only 20 percent, and his ability to buy industrial goods and pay for his rent and other non-food items was only three-fourths as great as in 1928. Since the spring of 1933, these non-food costs have remained practically unchanged at about 83 percent of the 1928 level, and now that earnings per factory worker have also advanced to 83 percent of the 1928 level, the average employed factory worker can again buy as much of industrial and other non-farm foods as in 1928. As far as the employed factory worker is concerned, then, we have now a fair balance between earnings, food prices and non-food living costs. The real problem is with the unemployed, how to give them permanent employment and earnings enough to restore their former standard of living.

Factory employment in the spring of 1933 was down 40 percent from the 1928 level. At present, the number on factory payrolls is 83 percent of the 1928 level, an increase in numbers employed of nearly 40 percent

(Continued on page 4)

STATE POPULATION TRENDS OFFER SERIOUS PROBLEMS

Unemployment Checking Country To City Flow, Says Dr. W. E. Garnett, Sociologist

The article by Dr. Carl Taylor in the November issue of the *Extension Division News* discussing the forces causing a change in American farm life, treated certain population trends in general terms. Population trends are matters of supreme importance and a more detailed analysis of certain population problems and trends in Virginia may be of interest to readers of this publication.

Probably the two most important population questions in Virginia today are: (1) What are the possible outlets for the surplus rural population? (2) What can be done about the state's large marginal population? The general decline in birth rate and the excessive birth rate in certain areas and among certain population elements are also questions for general concern.

One of the most striking things about the population situation today is the declining birth rate. In Virginia the birth rate per 1,000 rural white women aged 15 to 45 in 1930 was 547 as compared to 644 in 1910 or a decline of 97. The parallel group of city women had 315 children in 1930 as compared to 380 in 1910 or a decline of 65. The rate for rural negro women in 1930 was 588 and of their town sisters 290, while in 1910 the figures for these two groups were 662 and 287, respectively. Other sections of the country, especially the densely populated centers of the north, show even more striking birth rate declines.

The decline in the birth rates in Virginia are not taking place in all sections and in all social strata alike. In Buchanan county, for instance, the birth rate per 1,000 white population was 43.6 in 1933 as compared to a rate of 20 for the state as a whole. Furthermore, such data as are available indicate that the birth rate among those with higher standards of living is declining the most. This element also migrates from the country most frequently. These two forces make for a progressive deterioration in the quality of the population. The declining birth rate is also causing a change in the age composition of the population, which in turn affects buying habits as well as many other things.

The Surplus Rural Population

Even though the birth rate is declining there are still, in the rural areas, births in excess of the number required to keep the population at present levels. In fact, at the 1930 rate (443 children under 5 years of age per 1,000 women aged 20 to 44, needed to keep the population at a stationary level) rural Virginia will in 10 years have an increased population of 155,000 to be cared for. Farm mothers will contribute about 96,000 to the number and negro mothers about 33,000. Every county will have some excess population; a few in which the population has already outrun resources will have more than twice as many children than needed to maintain 1930 levels. The cities, on the other hand, will in 10 years lack around 1,150 of having enough children to

maintain their population at the 1930 level. In fact, the birth rate is below the death rate in every city in the state except six—Buena Vista, Radford, Martinsville, South Norfolk, Clifton Forge, and Hopewell.

What is to become of this increased rural population? Can room be found for them in the country? Or must they migrate to Virginia cities or out of the state?

Theoretically there are many idle or poorly used acres in Virginia which can absorb a greatly expanded rural population. Actually, however, unless there is a great increase in the demand for farm products, or unless much supplementary non-farm work on a part time basis is available for many of those engaged in agricultural employment, much expansion of the farm population will apparently result in a lower standard of living in the country.

In this connection it is well to remember that the agricultural production for the country as a whole was approximately 2⅛ times as much per worker in 1930 as in 1870 and 22 percent more in 1931 than in 1922. Virginia is apparently keeping pace with other parts of the country in increases in agricultural efficiency. In other words, increasing per acre yields, more eggs per hen, more milk per cow, shifts from the cultivation of poorer lands, declining population, changing consumptive demands, declining exports, and substitution of machinery for man and horse power all mean the need of a smaller rather than a larger number in agricultural work. The displacement for the nation as a whole of something like 10 million horses and mules by autos and trucks and the consequent necessity of finding other uses for or else dropping from farming the 30 million horse-feed-producing acres, and the 1920-33 decrease of 93,000 in the Virginia tobacco acreage, largely because of declining export demands, afford two concrete illustrations of the working out of these forces.

The 1920-1930 decline of over 30,000 in the number engaged in agricultural work in Virginia was an adjustment to these forces. The same is true, to a large degree, of the movement in the same period of 241,000 people from Virginia farms, 22.7 percent of the number living on farms in 1920. This migration largely accounts for the state's 1920-1930 urban increase of 16.5 percent despite the low city birth rates as compared to a rural increase of only .1 percent. Many of the rural migrants went to the Virginia cities. Others helped swell the 222,000 army which left the state during this decade—a migrating army of which a little over half was negroes. This great out-of-state migration was partly traceable to the fact that during the 1920-1930 decade there were approximately three young men reaching maturity in Virginia for each new employment opening—and two of the three were from the country. During the period of industrial expansion and prosperity, rural migrants got jobs without great difficulty. With the excessive distribution cost, the increased use of machinery and the industrial dislocations of recent years, this they can no longer do.

It is estimated that by 1940 several million rural young people who are not needed in agriculture will be piled up in the country. This process is already under way in Virginia. The insecurity of urban employment, the reverse movement of city workers thrown out of work and returned to the country during the past five years, and the lack of other outlets for rural youth just reaching maturity help to account for the 31,783 increase in the number of farms in Virginia since 1930 and the 906,654 acre increase in farm lands. Part of this increase of farm acreage is land of marginal character, thus reversing the trend of the past 50 years for such land to go out of use and for the number of farmers to decline. Instead of the farm acreage thus increasing, it is estimated that from ⅛ to ¼ of the land in farms in 1930 is of such quality that it should go out of agricultural use. Furthermore, the farm land in many areas of the state is already approaching the population carrying capacity. In 1930, 30 counties had a farm population of from 125 to 175 per 1,000 acres of improved land, (crops and pasture) and 3 counties had more than 225.

Excessive Marginal Population

At a conservative estimate at least half of Virginia's white rural population may be considered marginal from the standpoint of income, living standards, education, and ability. This is an even more serious population problem than the questions of surpluses outlined above. In fact, it is closely related to the latter since it is from the marginal group that much of the surplus population arises.

Those who have given little study to the matter will be surprised to know that only 40 percent of those engaged in farm work in Virginia in 1930 (other than unpaid family labor) are white owners, and that over ¼ of this 40 percent are marginal. Less than ¼ of the 98,115 white farm owners may be considered really prosperous or have really high standards of living. This is still less true of the 32,822 white tenants or the 45,218 white farm wage workers, as well as of the 24,525 negro farm owners, 15,148 negro tenants, and 32,230 negro wage workers. Less than one tenth of the farm operators had a gross income of $2,500 or more in 1929 as compared to 41 percent with less than $600. The majority of the wage laborers receive less than $400. The majority in these several groups represent families. About a third of the white and two thirds of the negro farms are under 50 acres in size. Except in specialized intensive types of farming, a 50 acre farm rarely maintains a good standard of living. This is especially true in the mountain counties where small holdings are the most common.

How little property many farm families own is indicated by a recent study of 2,907 white families in 12 communities of 11 counties. It was found that 37.3 percent had so little property that they were not even listed on the tax rolls, while 23.4 percent had a real estate and personal property assessment of between one cent and $2.50 and only 12.2 percent an assessment of over $25.00. Fifty-nine percent of the families of these communities were classed as marginal.

When we speak of the needs of the farm population there has been too much of a tendency to consider the welfare of only the more prosperous fraction and ignore the needs of the more marginal elements. In the agricultural adjustment program, for instance, only 53,318 or 31.3 percent of the 1930 farm operators signed AAA contracts and received crop reduction benefit payments in 1935. This is not because the majority of those eligible have not signed up, but rather because a high percentage are not commercial farmers and hence the adjustment program and benefit payments do not apply. In 1930, 44,149 or 27 percent of the total farm operators reported themselves as subsistence farmers. The average value of the farm production of this group in 1929 was only $465. This included both what they sold and what was consumed at home. Home consumption was 67.1 percent of the total.

Checks made in a number of communities indicate that only a small percentage of the more marginal group is getting the benefits of aid from farm and home agents and high school teachers. In fact, there are probably 100,000 such white families in the state. It is this group which is most in need of the help such agencies can give them, especially the help to be had from home agents. Furthermore, these marginal families are reached by few organizations.

While some may think they gain by having a large marginal population on which they can draw at will for cheap labor—only 27.3 percent of the farm operators reported hiring labor in 1929—there can be no denying that the state as a whole loses from such a situation. All types of community institutions and community life as a whole certainly suffer. Having such a large marginal population goes far to account for Virginia's comparatively low rank in 1930 in a number of counts, such as 39th in per capita wealth, 36th in per capita income, 32nd in incomes per $1,000 farm property investment, 43rd in percent of school population enrolled in high school, and so on. Scrub folks are as costly to a state as scrub chickens, pigs, cows, and corn. In fact, more so, especially if they keep on multiplying more rapidly than other population elements, as they tend to do.

It should be remembered, too, that changing conditions tend to make the problem a more acute one than it has been in the past. As already pointed out, increased use of machinery, the tendency to cultivate only the better land, and declining exports decrease the demand for farm labor. The exhaustion of timber supplies and the decreased demand for bootleg products have reduced the possibilities for supplementary non-farm work. Hence the pressure for more road jobs and other forms of relief work.

Constructive Measures

These facts would seem to justify these conclusions:

1. The declining need for agricultural workers and reduced opportunities for rural migrants is producing a surplus rural population of considerable proportions. This surplus is to a considerable degree being forced into subsistence farming or into relief work. Much of the subsistence farming is on marginal land. The present enforced tendency to subdivide farms in addition to the generation to generation partitioning is in many cases reducing the size to a point where farms are too small to maintain decent living standards. Subsistence farming without outside employment almost invariably results in low standards of living.

2. The excessively large marginal population is adversely affecting the state's well-being in many directions. The more rapid multiplication of the marginal elements is tending to a deterioration of the quality of the state's population.

3. Public agencies—the farm and home extension service, the public school system, the churches and other organizations—do not have a sufficiently vigorous program for dealing with the marginal population problem.

Among the many measures needed for dealing constructively with these problems, the following appear to be the most urgent:

1. A great enlargement of the home demonstration service staff with a more definite assumption by home demonstration workers of the responsibility of rendering more aid to a larger percentage of the marginal families, together with any needed modifications of their procedures and programs to better fit the needs of the marginal group.

2. The extension of more aid to subsistence farmers by farm agents and high school agricultural teachers, rather than confining their efforts so exclusively to commercial farmers, such aid to include efforts for participation by subsistence farmers in several needed types of cooperative enterprises.

3. Needed modifications in the public school course of study to better meet the

(Continued on page 5)

DAIRY EXTENSION NEWS

SEASONAL NOTES TO VIRGINIA DAIRYMEN

The business of dairying has developed both extensively and intensively in Virginia during the past 20 years until today it is one of our most exacting farm operations. Many of the problems involved in modern dairying are frequently beyond the individual dairyman's control. There are other problems, however, that must be met almost daily and solved by the dairyman himself. It is the prompt recognition and solution, or perhaps the prevention, of these problems that may make the way of the dairyman easier and more prosperous.

Saving the Cows' Udders

One contributing factor in the high cost of producing milk on some farms is the annual loss of cows because of udder troubles which may be greatly reduced or entirely avoided through correct herd management. Most dairymen recognize that a dairy cow's udder, due to its natural overdevelopment through generations of breeding, is susceptible to many ills which seem to become more frequent and more serious during winter. This affliction of udder ailments in winter rather than summer is in many cases a reflection on our methods of herd management in winter. Over-crowded stables, exposure to unsanitary surroundings and to wet and cold, being on cold concrete floors, faulty feeding, irregular and incomplete milking, etc., are just a few of the controllable conditions of environment which may directly or indirectly cause a flare-up of udder troubles in a herd.

When udder troubles develop in a herd those responsible for the management of the herd frequently treat the ailment without trained knowledge or skill. In some cases crude methods and cruder instruments have proved an aid to the disease rather than a deterent.

A cow's udder is one of her most sensitive organs; through its daily milk secretion it will reflect the cow's physical well-being. This is amply demonstrated when one makes a daily study of the milk production records of cows in the herd. Radical fluctuations in a cow's daily production is frequently the forewarning of approaching sickness, and the careful dairyman is quick to act on such warnings.

Preventing rather than curing is the logical and most economic way of treating udder troubles. But frequently the presence of udder trouble is not suspected until inflamation appears and the cow refuses her feed. From this stage on it is a serious problem for the dairyman to arrest the progress of the disease and effect a cure without the lumpy, broken down condition, or slack producing quarters which are the common sequels of udder infections.

In no department of dairy herd management is a little knowledge more dangerous than in the treating of an infected, inflamed udder. Very often the "shot gun method" of treatment is used: i.e., a whole series of treatments are blindly "shot" at the disease with the hope that one will be effective. This method of approach to the problem may or may not prove effective. Usually such treatment is more clearly an admission of ignorance of the disease and its cause than it is a palliative for the trouble. The hit and miss method of treating udder diseases is inexcusable wherever skilled veterinary treatment is available. The proper treatment of one case, regardless of the economic value of the cow so treated, may be the correct procedure in preventing a ruinous contagion from gripping the whole herd.

Aside from poultices, ointments, massages, and frequent milking, the use of the milk tube is occasionally resorted to in treating difficult cases of udder trouble. In skilled hands the milk tube is a very useful instrument in treating certain types of udder disease; in unskilled hands, however, it may easily become an instrument of destruction. In any treatment of a cow's udder too much emphasis cannot be placed upon hygienic methods. The cow should be promptly isolated in a clean, comfortable box stall away from the rest of the herd. Then the cow's udder should be kept clean and properly disinfected. All instruments inserted into the teats should first be boiled for 20 minutes and, in addition, should be kept immersed in a 5-percent solution of carbolic acid. When the tubes or instruments are used, they should be wet with disinfectant solution and no part that is to be inserted into the teat or udder should be touched by hand during insertion. This method may prevent the cause of reinfection or further aggravating the trouble.

Why Milk a Cow Clean?

The dairyman who does not keep a daily record of the pounds of milk each cow produces has no means of knowing whether each cow is milked clean, unless he milks all the cows himself. Some dairymen claim that it takes too much time to weigh each milking from each cow every day. Other dairymen claim that no time is actually lost in weighing the milk every day because the information from such records provides compensating economics in the milking, feeding, and general management of the herd.

Failure to milk a cow clean at each milking means considerable loss to the dairyman over a period of time, mainly because of a loss in butterfat. The first milk drawn may contain as little as one percent of butterfat while the last milk drawn may contain as much as ten percent, depending upon the individual cow. Where milk is sold on the basis of butterfat tests, failure to include the strippings in each day's milk will have its effect on the monthly milk check. If a considerable amount of milk is allowed to remain in a cow's udder, or if the cows are milked irregularly, they may tend to arrest milk secretion and thereby shorten their lactation period.

Guard Against Ring Worm and Lice

Winter housing and general management conditions tend to make dairy cows more susceptible to such parasitic diseases as ring worm and to infestations of lice. Both afflictions can be prevented by proper precautionary measures in the fall and early winter.

Ring worm is caused by a vegetable parasite that grows on the skin, attacking the hair follicles, and causing grayish-white circular encrusted areas to develop. It is more prevalent among mature cattle than young cattle. Lice attack cattle regardless of age. Once infested a herd's vitality is likely to be sapped by these parasites. Therefore, the dairyman should endeavor to prevent such infestations before the herd is placed in winter quarters. It is usually a good practice to clean thoroughly, white wash or paint, and disinfect the stable at least once a year, preferably in the fall, to get rid of parasites and parasitic spores that may be harbored there.

Treatment for animals infested with ring worm consists of washing the encrusted areas with soap and water and painting the crusts with iodine or sulphur ointment. For lice, spray with a 2 percent solution of creolin, or in cold weather dust with sulphur or commercial louse powder. In warm weather raw linseed oil can be brushed lightly into the hair of the animal as an effective remedy for lousiness. Animals treated with linseed oil should not be exposed to direct or hot sun rays for several hours, to avoid blistering the animal's hide.

KILLING AND CURING PORK ON THE FARM

Farmers should raise and slaughter a sufficient number of hogs to provide an adequate supply of fresh, cured, and canned products to take care of family requirements. It appears that this will be particularly important this year as retail meat prices will probably continue high for the next twelve months. In addition to taking care of family requirements, pork products may be used in part payment for farm labor; and many farmers sell cured products, particularly hams, at very satisfactory prices, once a reputation for quality is established.

Whether for sale or home use, the quality of the product is an important consideration. Well finished but not excessively fat hogs weighing 175 to 250 pounds at seven to ten months of age produce an excellent quality of meat and cuts of convenient size. Many farmers prefer heavier and fatter hogs, and they are satisfactory where a good lard supply is desired and heavier cuts can be conveniently handled.

At the time of slaughter hogs should be in a healthy condition and gaining rapidly in weight. For eighteen to twenty-four hours before killing they should be kept off of feed but provided with plenty of water. Excitement before killing should be avoided.

Sticking is considered the best method of killing as it insures thorough bleeding. In sticking, care should be taken to avoid running the knife into the shoulder or heart.

At the time of scalding the water should have a temperature of about 150° Fahrenheit. Having it much above this temperature has a tendency to set the hair.

Thorough cooling of the carcass will help to prevent much meat spoilage and a better job of cutting can also be done. However, the carcass should not be allowed to freeze. Dividing the carcass by sawing down the center of the backbone aids in cooling. The best plan is to kill one day, preferably in the afternoon, if weather is moderate, allow the carcass to hang over night and then cut and salt the meat on the following day. Never salt meat while it is hot. The most desirable temperature for cooling is 34° to 40° F.

The usual farm method of cutting is to remove the head and then remove the backbone by cutting the ribs down each side of the spine. Each side is then divided into three cuts: ham, middle and shoulder. Another method is to cut down through the center of the backbone after the head is removed. Each side is then divided into three parts: shoulder, middle, and ham. The middle is divided into bacon, loin, and fat back. The latter method has some distinct advantages: it separates thin meat from thick meat and fat meat from lean, it permits better use of the loin either fresh or canned, and makes a neat attractive cut of bacon. All cuts should be neatly trimmed regardless of the method of cutting.

Salt is the principal curing agent used and the basis of all meat curing. Sugar or molasses gives meat a sweet flavor and also has a tendency to soften the muscle fibers, counteracting the hardening effect of salt. Saltpeter has some preserving effect and also brings out a natural red color. Pepper

EXTENSION DIVISION NEWS

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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.

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is used both for seasoning and to repel insects.

The following formula is sufficient for 100 pounds of meat:

8 pounds salt
3 pounds sugar
2 ounces saltpeter

Mix the ingredients thoroughly. Then rub half of the mixture on the meat and pack it in a box or barrel. Repack the meat in about one week, using the other half of the mixture. Allow the cuts to remain in cure two days to the pound, that is, a 15-pound ham should remain in cure 30 days.

Bacon requires less time in cure than hams, and a milder curing mixture is desirable. It is suggested that in curing bacon only five pounds of salt be used in the above mixture and the cuts be left in cure one and one-half days per pound.

Smoking helps to preserve meat and gives it a desirable flavor. Green hickory wood is generally preferred, although maple, apple, and oak are satisfactory. A slow smoking process is preferable. After the meat is smoked it should be stored in a cool, dark place. It may be further protected by wrapping in paper and put in muslin bags.

FACTORY WORKERS' EARNINGS KEEP PACE WITH FOOD PRICES

(Continued from page 1)

since March, 1933, or just about equal to the percentage of increase in the earnings per employed worker.

The factory unemployment problem is of course greater than indicated by the fact that the rolls still show 17 percent less than in 1928. During the past seven years the population has grown and more people are available for factory work.

Most of the factory unemployment problem lies outside the factories that process agricultural commodities. In August, 1935, the factories processing farm products were employing within 8 percent as many people as in 1928, but the factories processing non-farm raw materials were employing 30 percent less. Furthermore, the volume of production for the country as a whole, which is far below normal, is depressed almost entirely because of the failure of the non-agricultural industries to produce relatively as much as is being produced in the industries that process farm products. During the past five years, manufacturing output dependent upon farm products has remained at about 90 percent of the 1929 level, and was 90 percent of that level in August, 1935; but manufacturing output in industries using non-agricultural products fell to 35 percent of the 1929 level in the spring of 1933 and in August, 1935 was still only 65 percent of the 1929 volume.

The lack of balance is not on the agricultural side of our economy. An increase in non-agricultural production of 40 to 50 percent, and not a lower general level of food prices, is the real need. That would about restore jobs to most of the unemployed. Farmers, by continuing to produce for normal domestic consumption, are doing their part toward further general recovery. Their ability to purchase a larger volume of industrial goods in a very large measure depends on the production of more industrial products. That would increase the national income to be shared proportionately by the industrial and rural population.

HOME DEMONSTRATION NEWS

A clothing clinic was held recently in King William county, a county which does not as yet have home demonstration work. Twenty-five women brought to the clinic old clothes of all kinds, including dresses, coats and hats. They were given suggestions for remodeling and refurbishing thirteen dresses, six coats and one hat.

The most interesting problem of the day was a long black caracul cape which had been a part of the trousseau of this young girl's mother. The club member did not hope for much but wanted to find out if it could be made into something wearable. The cape was first cut off at the waist line, the shoulder seam opened up and a flared piece set in on each side to make the cape flared and circular. The worn part down the front was trimmed away.

From the remaining material cut from the cape a large square muff was fashioned, and a small hat in Russian Cossack style. The new outfit was very smart on this slender girl. The only cost was the work and a new lining and perhaps she might even find old material for the lining at home.

If the county campaign results in Augusta county along home improvement lines are indicative of the success of the plan in other counties, then the results in the state as a whole will be most gratifying. The figures show that 342 women in Augusta county enrolled in this campaign, but their enthusiasm spread to 931 other women who, though not actually enrolled, made improvements because of the good work of their neighbors.

Thirty-three electric refrigerators, 26 new ranges and 19 kitchen cabinets were bought. Thirty women put running water in kitchens and 40 others added a pitcher pump, which means that seventy homes in that county will have a better water supply for this coming year.

Screens were put on 1,167 windows and 674 doors. In 367 rooms there is fresh new paper or paint. In 259 rooms the woodwork is painted and 352 floors were refinished. The roofs in 234 homes were repaired or new ones put on.

Many other improvements were made. It seems that when once the women got started they did the job well as illustrated by Miss Nettie Houser, the champion campaigner. Miss Houser put in a complete water system and bath; painted the exterior of the house; improved the walls of 13 rooms, painted woodwork in 9 rooms, refinished floors in 5 rooms; repaired the roof, chimney and window casings; repaired and painted the yard fence; put shelves in the basement for storage of canned goods; refinished 6 pieces of walnut furniture—all for the cost of $650 and much thought and planning.

Uncle Ab says that the person who makes a virtue of not chewing gum may have false teeth.

ORIGINS AND OBJECTIVES OF EXTENSION WORK

A. Frank Lever, Director of Public Relations Farm Credit Administration, Columbia, S.C.

The barefoot boy stumps his toe against the rock in the road and realizes for the first time the necessity of watching his step. The trembling of the teakettle lid attracted the attention of Watt and gave the world the steam engine. The almost total deafness of Mrs. Alexander Graham Bell gave us the great world-wide system of telephonic communication. The story of the influence upon human history of the seemingly trivial things constitutes the most fascinating chapter of the history of civilization. Newton saw the apple fall and discovered the great principle of gravitation. The good old Benjamin Franklin with his kite drew sparks from the lowering clouds and harnessed electricity for the needs of man. Southern civilization is in the re-making day by day because of the activities of a tiny insect.

It is now 45 years since the Mexican boll weevil crossed the international boundary line and made its first assault upon the cotton fields of Texas. A decade passed before this insect began to be recognized as a positive menace to cotton production in the South and as a veritable challenge to the foundations upon which were built Southern institutions and civilization. The boll weevil, with historical propriety, may be pointed to as the moving cause for that legislative action out of which has grown the new method of agricultural teaching known as the "Extension System" of the United States." For ten years, the destructive work of this insect foiled every effort of entomologists and scientists to find a practical plan either materially to reduce its ravages or permanently to checkmate its steady advance into the cotton belt. The authorities of the Department of Agriculture in Washington were baffled almost to the point of panic. And then in 1902, Doctor Seaman A. Knapp, at the time a minor official in the Bureau of Plant Industry, was despatched to Texas with instructions to find a way to stop the inroads of this insect. Knapp was an idealist—a dreamer—into whose dreams were mixed in almost uncanny fashion the elements of common sense and experiences gathered from his early days upon the farm. In a few demonstrations in cooperation with intelligent local cotton farmers, he became convinced that under average climatic conditions, cotton could be produced at a reasonable profit, in spite of the boll weevil. His formula was based upon a system of agriculture which took into consideration **better soil preparation, better seed, earlier maturing varieties, rapid cultivation, and proper fertilization**—in fact, a new, modern system of cotton production. To this, he added the principle of making each farm a self-sustaining unit of operation, and each farm home a place in which dwelt love, happiness, and security. His fundamentals were simple. The difficulty of the problem lay in getting his methods adopted by the cotton producers. It was a Herculean undertaking. It was a fight against tradition, ignorance, and obstinacy. None but a leader inspired with Christian missionary zeal would have undertaken it. Knapp did it. And his method of reaching the people was as simple as the fundamentals which he carried to them. His philosophies of agricultural teaching he himself summarizes in this striking statement: "We are likely to forget some of the things we see; we will probably forget most of the things we read, but we generally never forget the things that we do." You see Knapp knew the farmer. He knew how firmly fixed he was to the ruts of inheritance and

(Continued on page 6)

HORTICULTURE

PROTECT YOUR SPRAY MACHINE

Most fruit growers take good care of their spray machines and stationary spray outfits during the spraying season. They see that all moving parts are properly oiled and tanks and lines drained and flushed after each spray; but many fail to see that the outfits are in proper condition for winter storage. The result often is delay and trouble at the beginning of the spraying season.

One common mistake frequently made is failure to drain and flush the tank and pump. Spray residue, remaining in the pipe lines and valves, hardens during the winter; then the pipes become clogged and the valves stick. This results in poor functioning of the machine, lack of proper pressure and costly delay. Failure to drain the valves and cylinders may cause even more serious trouble. Water left in these places may freeze, and valve seats or cylinder walls will be cracked.

These troubles may be eliminated by thoroughly flushing and draining all parts of the spray machine. After all the water is removed from the valves, they should be covered with kerosene or light lubricating oil. This prevents corrosion and a consequent sticking of the valves in the spring. A small amount of water should be left in the tank to prevent too much shrinkage.

Be sure to keep the spray machine under cover; they are expensive and every precaution should be taken to prevent unnecessary depreciation.

All moving parts of the machine are subject to wear and, toward the end of the season, some parts may break. To be sure of having the machine in proper running condition when spring days come again, order and replace all worn and broken parts well in advance of the time when it will be necessary to use the machine. This will eliminate the possibility of a delay in delivery of parts when the season is approaching and a resulting loss of time and delay in proper time of application.

All pipe lines in the stationary spray system should be drained and flushed. This prevents corrosion caused by spray material and eliminates the possibility of pipe lines being broken through freezing.

The spray hose should also be given proper attention. They should be thoroughly drained as spray material allowed to remain in them will cause rapid decomposition. It is not advisable to hang the hose over sharp iron bars or similar hangers. Such a practice causes a distinct weakening of the fabric and rubber at the point of contact with such a hanger.

Proper functioning of the spray machine is absolutely essential if a successful spray program is to be followed. Take care of your spray machine or stationary outfit if you expect it to take care of you.

HOW DO YOU PRUNE YOUR PEACH TREES?

Dr. A. Lee Schrader, *Research Pomologist*, University of Maryland

What determines the kind of cuts you are going to make on your peach trees and how do you know when to stop cutting? Is the tree telling the fruit grower how to prune its branches? Is the fruit grower shaping the tree according to some blueprint plan that will mathematically place a certain number of peaches on a wooden structure built for economical design as to strength, shape and ease of management? Or how is the trick accomplished? These questions are not answered simply by saying it is a matter of good judgment on the part of the pruner. The matter of good judgment must be analyzed in the light of experience and research work to give a more detailed picture which can be more readily visualized.

Experience is a good teacher, if you can interpret the many lessons which are being brought to your door. In peach pruning, a profitable experience resulting from wise pruning may assist in future pruning, but an unprofitable experience from unwise pruning tells us little to correct the condition resulting from such pruning. In other words, the peach tree from year to year may present a new problem in pruning which cannot be solved by experience of previous prunings. For instance, one grower produced poorly colored peaches under a dense canopy of foliage. His type of pruning, "a table-top-shearing," had been fairly successful until he increased his nitrogen fertilizer application. With this pruning method, the response to additional nitrogen was a dense new top growth with heavy foliage that cut out all sunlight from the fruits on the tree. Measurement of such light conditions showed only 200 foot candles under the tree foliage compared with 8,200 foot candles in open sunlight. In addition to poor color of fruit, under such shade, the tarnished plant bug injury, which causes knotty, ill-shaped fruits, is most prevalent and difficult to prevent.

If such mistakes in pruning are made, what can we do to correct the errors?

The correction of bad conditions, due to pruning, lies largely in a knowledge of the responses of tree growth to these types of cuts:

Type 1. Entire removal of branches or twigs back to the point of origin where the bud started such growth. Such removal is called "thinning out" and results in little stimulation to the growth of the remaining branches. Watersprouts do not occur at the wounds except where large branches are removed.

Type 2. The removal of a portion of a branch back to a lateral branch originating on two-year wood or older. Such cuts markedly stimulate the growth of the remaining branches. This cut is termed "cutting back" and is a very desirable type of cut to make on bearing trees in combination with a lesser amount of "thinning out." Annual cutting back into two- and three-year wood will avoid the necessity for heavy renewal pruning in any one year.

Type 3. The removal of a portion of the new wood, one-year-old, to a bud or lateral on such wood. The term, "heading back" is used for this cut. This type of cut is most often misused, especially on young trees. Bad results occur on older trees, as was the case, previously cited, when a dense canopy of foliage resulted in poorly colored peaches. On young trees a very bad condition, difficult to correct, results when severe "heading back" of new wood is done. The remaining buds on such trees push forth very vigorous upright shoots, clustered together, which necessitates severe thinning in later years and consequent dwarfing of the tree and loss of yielding capacity, especially in the early years of fruiting. These points have been discussed more fully in Maryland Station Bulletin 209. The ideal pruning of the young tree was shown to be a light "heading back" of new wood of main terminals and a light thinning to shape the scaffold, retaining inside twigs.

Corrective pruning of young trees too severely headed back proved fairly easy to accomplish with some 3-year-old Brackett and Shippers Late this past season, even to the extent of increasing yield compared with a general heading of the upright new growth. The corrective pruning consisted of a light heading of main terminals and considerable thinning out of crowding branches to develop well-spaced scaffold branches. The yield results, totals of 5 trees, were as follows:

	Shippers Late	Brackett
Corrective Pruning	11.30 bus.	8.75 bus.
Check	7.30 bus.	8.25 bus.

A more spreading tree resulted from the corrective pruning and consequently the fruits were more highly colored. Subsequent seasons, of course, should show decided benefits in tree size, fruit color, and yields.

In correction of bearing trees with the dense growth of new wood over the top, the matter was not so simple. Two seasons of pruning were necessary to make a decided change in the top response and increase fruit color. However, no more heading of new wood was done. Considerable thinning out of upright growths was accomplished the first season plus cutting back where possible to good lateral branches. Some slight improvement in openness of the tree and in fruit color was found in this first season. In the second season, with further thinning out and much fewer upright shoots to combat, the cutting back to lateral in two- or three-year wood resulted in an open spreading tree with fruits colored 30 to 50 percent in contrast with 5 percent or less on trees pruned by the former heading back to new wood. The yields on 15-year Elbertas were as follows:

	Average Yield Per Tree	Percent Color
Corrective pruning (8 trees)	4.53	30 to 50
Check (8 trees)	3.19	0 to 5

These results in Maryland orchards serve to emphasize the importance of knowing tree response to pruning cuts, and to use the saw and shears with good judgment, based on this knowledge.

STATE POPULATION TRENDS OFFER SERIOUS PROBLEMS

(Continued from page 2)

needs of the children from marginal families.

4. Increased effort to encourage fewer children in marginal families.

5. More systematic effort by local groups to develop non-farm employment for members of farm families, especially of the subsistence type.

6. Continuation on a more permanent basis of the resettlement program.

7. Increased effort for all measures that promise better income for both the more successful farm operators as well as marginal farm workers.

8. A concerted demand for the public policies—local, state, and national—which would make possible a fuller outlet for the constructive energies of all the people to the end that an economy of abundance rather than an economy of scarcity may prevail.

9. Systematic development and vigorous pushing of comprehensive long-time plans on both a state and local basis for dealing with the conditions and trends outlined as well as other important aspects of rural life.

Note: Those interested in such planning will find helpful Va. Agr. Exp. Sta. bulletins, 291, and 299, "Virginia County Conditions and Trends of Social Significance" and "A Social Study of the Blacksburg Community."

ORIGINS AND OBJECTIVES OF EXTENSION WORK

(Continued from page 4)

how skeptical he was of new things, new methods, that moved him into untried and unbeaten paths. The value of things had to be proven to him under his own vine and fig tree, and Knapp knew that such proof would be convincing only when the farmer himself was made a part of the method and when he himself did the actual work. Out of these thoughts grew the demonstration idea of agricultural teaching.

The Smith-Lever Act

Another decade passed, however, before the Congress became sufficiently educated and impressed with the work Doctor Knapp had been doing in the South to write into enduring legislation his all embracing philosophies of rural life and the basic principles upon which his methods of teaching were founded. (At this point, a personal reference is necessary in order to give the whole picture of this legislation. I am sure you will pardon it.)

During all these years, I was a member of the Agricultural Committee of the House of Representatives, and from the very beginning of his work, I was profoundly impressed with the belief that Doctor Knapp had not only discovered a method of growing cotton notwithstanding the presence of the boll weevil, but that he was doing far more than that, he was laying the foundations firmly and cautiously for a new agriculture and a new rural life in the South. I became his devoted disciple, I embraced his teachings and philosophies without reserve and with the ardor and enthusiasm of youth. I am proud to have been at all times the champion of his efforts, both in Congress and out of it. As a member of the committee, I was in position to translate into law and principles the methods that had motivated his life work. Thus it was that in cooperation with a committee of the Association of Agricultural Colleges, the Extension Bill was drawn and introduced into the House by me. It was put through the Senate under the skillful and patient management of the late Senate Hoke Smith, of Georgia, and was signed by President Wilson on the 8th of May, 1914, inaugurating a new system of teaching, national in scope, and reaching into the remotest communities of the country and influencing the economic and spiritual life of every American farmer, and every American farm home. It is a system of education, bedrocked upon the fine idealisms of democracy and universal in its reach and influence.

The purposes of this Act, to quote Doctor Knapp, are: **"To develop the resources; increase the harvests; improve the landscapes; brighten the homes; and flood the people with knowledge about helpful things."** And again: **"To readjust agriculture; to reconstruct the country home; and to put rural life upon a higher plane,"** and all of this to be accomplished by the objective method of teaching—of having the farmer learn to do by doing. Walter Hines Page said of this system: **"This is the greatest single piece of constructive educational work in this or any age."** Another great educator said of Knapp: **"He is the one great agricultural statesman that this country has thus far produced."** And, may I add: **"That he is the one great agricultural leader of this or any age whose every effort was fashioned to meet the needs of the common man of the farm and to do it in a common-sense way."** When David F. Houston was President of the State A. & M. College of Texas, he said: **"There are two universities here in Texas—one is at Austin—the other is Doctor Knapp."**

Under the terms of this Act, and with funds supplied by the states and the Federal Government, practically every rural county in the United States has its county demonstration agent and its home economics agent. These agents are teachers—itinerant teachers—pedagogs, in reality—carrying out to the farm and into the farm home the best stores of information gathered by scientists and research workers in the agricultural field throughout the world, and putting these into actual working effect under the conditions surrounding each individual farm unit. The weakness of American Agriculture has been found in its lack of rural community leadership and inspiration. These agents supply this deficiency. They are the walking reservoirs of agricultural theories and sound practices, and at the same time sources of leadership for each farm community. These devoted men and women catch the vision of **the more efficient farming, the more happy and satisfied farm life; they catch the vision of the farm as the original source of wealth and the family as the sheet anchor of the safety and perpetuity of American institutions, and like missionaries in foreign fields, they carry these visions into the lives and activities, into the hopes and dreams and inspirations of our rural people everywhere.**

FARM MANAGEMENT — AGRONOMY — SOILS CROPS

Use Better Seed—It Means Larger Yields, Better Quality Crops, and More Profits

NOTES ON THE STATE SEED SHOW

Outstanding among winter events of interest to Virginia farmers is the State Seed Show sponsored by the Virginia Crop Improvement Association and the agronomy department of the Virginia Agricultural Extension Division.

Not in this state alone but in many other states farmers are now picking likely samples of corn and potatoes to compete for the prizes and much cherished ribbons. And well they might as the winning of these trophies sets them somewhat apart from their neighbors who are less fortunate or less skillful in picking their exhibits.

It is only natural that anyone buying seed would prefer a supply from the bins of a farmer who can carry home visible evidence that he can produce and select better seed than the average.

The State Seed Show is held somewhere in Virginia each year. Each time a section is selected somewhat removed from that of the previous year in order that over a period of years as many people as possible may be given an opportunity to see this large collection of quality grain, potatoes, and other farm products.

Not only are the exhibits of splendid educational value but the accompanying program is always built around strong agricultural leaders and speakers. This feature alone would justify the farmers of the state in traveling many miles to attend this meeting.

The Seed Show for 1936 is being held January 30-31 at Warrenton, in an interesting section of the state. Committees composed of citizens of that town are now lending their efforts toward making the event one of the most successful shows held so far. A brief and tentative résumé of the program is given below.

Director John R. Hutcheson of the extension division will appear on the program with a subject yet to be determined. Director Hutcheson's ability as a speaker on farm topics is too well known to the farmers of Virginia to require further comment.

Of equal interest, from a farm management standpoint, will be a discussion of "Adjusting Farm Operation to Present Day Conditions" by Prof. T. B. Hutcheson. No farmer who is really interested in his future welfare should neglect to hear Prof. Hutcheson discuss this timely topic.

S. S. Obenshain, who has been doing soil survey work in the state for several years, will point out "The Practical Value of Soil Survey Work to the Farmer," on the morning program of the second day.

"The Effects of Our Liming and Underliming" will be shown by H. L. Dunton of the agronomy department of the extension division. This subject should be of interest to anyone who tills the soil.

Almost everyone is aware of the terrific loss our farms sustain each year as a result of erosion, but until recently farmers have shown no great concern about controlling it. Dr. Lyman Carrier, director of the U. S. soil conservation service in Virginia, has consented to appear on the program in a discussion of "Erosion and Its Control." Erosion is a problem we will have to meet sometime and it is hoped that our people will not miss this opportunity to hear Dr. Carrier and obtain the full benefit of his experience.

Of special interest to farmers, and particularly those of northern Virginia, will be the talk on, "The Value of Certified Seed in Profitable Dairy Farming" by Prof. C. W. Holdaway.

Realizing that after all the best crop we grow in Virginia is young people, we have asked D. J. Howard, acting supervisor of agricultural education in Virginia, to discuss, "The Future Farmers and Their Responsibility to the Crop Improvement Program." This discussion should be of special interest to the numbers of vocational agricultural students and 4-H club boys who will attend the show.

W. H. Byrne, extension agronomist, V.P.I., who has been intimately associated with the Virginia Crop Improvement Association for a number of years as its secretary, will answer the question, "Why Use Certified Seed?" Mr. Byrne's ability as a speaker has been too often proven to merit further comment, and his knowledge of the value of good seed makes him a very appropriate choice to handle this subject.

The annual banquet will be held the evening of January 30 from 6:30 to 9:00. This event will be given over to relaxation, good cheer and presentation of medals.

The program is tentative as yet and will be definitely offered later on to the county papers. It will also appear in the State Seed Show catalogs, which will be available the latter part of December and can be obtained from county agents, or direct from the Virginia Crop Improvement Association, Blacksburg, Virginia.

Fall-farrowed pigs or growing and fattening pigs should have warm and desirable quarters during the late fall and winter months, with access to small outside lots during at least part of the day.

Before bees are insulated for winter, they should be moved from a windy location to one that is well protected.

Uncle Ab says that strength of any sort has no value unless it is exerted.

Uncle Ab says he hopes to die young no matter how old he is.

EXTENSION CONFERENCE

All farm and home agents in Virginia will gather at V. P. I. January 6-10 for their annual conference with specialists and natural leaders. Present agricultural conditions will be reviewed and plans drawn up for the ensuing year. One of the five days will be given over to the county agricultural planning program, the long-time program designed to replace the emergency features of the AAA.

Economic conditions, state and national; home demonstration work; rural rehabilitation and resettlement and other projects will be considered, along with the regular extension programs of the departments of agronomy, animal husbandry, horticulture, dairy husbandry, agricultural engineering, and poultry husbandry.

PROCESSING TAXES— REAL AND IMAGINARY

"One of the amazing things about the public attitude toward the farm program in general and the processing taxes in particular," says Henry A. Wallace, Secretary of Agriculture, "is the extent to which that attitude is NOT based on facts. I mean simple facts, not complex ones; facts which must be admitted whether you favor, oppose, or are indifferent to the program. I mean facts as unmistakable as the height of the Washington Monument, or the number of acres in a quarter-section of land.

"By way of illustration, let me tell you about an experiment an acquaintance of mine has lately been trying. Wherever he finds a group of people complaining about high food prices, and attributing the high price to the processing tax, he asks these people to do a little estimating. Since they usually mention meat prices, he asks them to estimate how much the processing tax amounts to in a dollar's worth of beefsteak.

"So far he has collected several score of answers, mostly from city people, and the answers range from 3 cents to 65 cents. And yet there is not now, and never has been, any processing tax whatsoever on beef! Not more than one out of every 20 people this man has talked to know that simple fact.

"This situation was brought home to the Washington office of the AAA rather strikingly only a few weeks ago. George Farrel, in charge of the wheat section, walked into a butcher shop near his home here to buy a steak. The butcher picked one out for him, and then apologized for the price. 'Sorry it's so high,' the butcher said, 'but it's because of the processing tax.' When Mr. Farrell replied that there was no processing tax on beef, the butcher wasn't shaken a bit. 'But,' said Mr. Farrell, 'I'm in the AAA myself. Don't you think I ought to know?' The butcher then asked what he did in the AAA. When Mr. Farrell said he was in the wheat section, the butcher replied: 'Oh, well, you may know something about wheat, but meat is my department, and that's why I know about the tax on beef.' So far as I know the man still believes there is a processing tax on beef.

"From a woman in eastern Ohio has come a protest against 'high prices of foodstuffs, notably, at present, two staples, meat and potatoes.' Then she asks, 'How are we to pay the increased and increasing prices of these two named commodities, production of which is so decidedly curtailed when our purchasing power is yet at such low ebb?'

"Now what are the facts? First the facts as to curtailment programs. There is no curtailment program for beef, or veal, or lamb, or chicken. The only curtailment program she could possibly be talking about is that involving pork, and that program, as now shaping up, calls for material increases in production.

"And as for the curtailment program on potatoes, not one pound of potatoes or one solitary acre of potato land has yet been affected by any such program, for the simple reason that the much-talked of potato act has not yet gone into effect."

"The complaint about the price of potatoes is difficult to understand. With potato growers getting around 50 cents a bushel, as they have for two years now, the price to the farmer is the lowest in many years. Compare it, for instance, with $1.31 a bushel in 1929, or $1.66 in 1925. It seems grotesquely inaccurate to talk about the high price of potatoes when consumers are pay-

(Continued on page 8)

POULTRY

SELECTION AND CARE OF BREEDERS

Quite often the question arises, "Are we getting too many chickens in the country?" or, "Isn't the poultry industry being overdone?" I do not believe we need to worry over these questions, but rather over "What kind of chickens are being raised? Do we get sufficient egg production and is the mortality of our chicks high or low?" These are the questions in which we should be vitally concerned, and the answer is, to a great extent, summed up in one word, BREEDING.

If we are to obtain best results, more thought and time must be expended on the selection and care of the breeders. Many of our farmers still continue to hatch eggs each year from any old hen that may have been lucky enough to remain on the farm over winter. The flock may be headed by a rooster, young or old, black or white, just as long as he will crow and find a living for the females of the flock.

I wonder if the farmer who has kept such hens and has hatched chicks each year has ever given special consideration to these hens and this rooster which have made up his farm breeding flocks. Has he ever thought of whether the birds that have been kept were healthy, of any special variety, and have been good producers as pullets? Probably he has not. He has simply thought about hatching a few chicks to produce a few good broilers, a few eggs during the spring and summer months and, by luck, a handful of eggs during the fall and winter.

If one expects to raise his chicks from his own flock, the ultimate object should be to produce a flock of pullets that will lay the greatest number of eggs of the highest quality at the least possible cost per dozen eggs; that is, pullets that will give the greatest net profit. In order to produce such pullets, one must choose breeding hens that are vigorous, alert and efficient transformers of feed into good, large, perfectly formed eggs. These hens should be neither too large nor too small and their bodies should be such that all parts are well balanced. The male or males mated to these hens should give constant and effective mating service throughout the breeding season, yet retain their vitality and be good for a long period of usefulness as breeders.

Every bird selected for the breeding pen should have three fundamental characters. They should have stamina, alertness, and intelligence; in other words, they should be vigorous. They should all have large capacity for the egg and food organs. They should also possess the ability to transmit their desirable characteristics to their young.

The male should possess a masculine make-up. He should by all means be free of any defects and abnormalities, as in the case of the breeding female.

The head is the best single character to use. The head in the male should show masculinity, health, and vigor. The body should be more massive throughout the front than the rear portion. The reverse should be true for the hens in full lay. Size is also a very necessary point. The standard weight for the breed should always be considered.

The male should be the most superior specimen. He should be hatched from a good-sized and good-colored egg and his mother should have been a good layer.

If these points are considered in selecting a breeder for the future, the egg yield of the entire flock will gradually increase; but, if the breeders are not so selected, the average production is very likely to decrease.

The proper management of the breeding stock is of great importance in securing the largest possible number of good chicks from the eggs set. The proper care of the male breeder is especially important, since he is the sire of every chick from each of the females in a pen. The male should get plenty to eat at all times during the breeding season.

Unless the conditions under which the breeders are kept are almost ideal, both fertility and hatchability may be adversely affected. The breeders must be healthy and vigorous and must be kept in clean, well-ventilated houses. The houses should be kept free of mites and the birds free of lice. If the litter in the breeding house is allowed to become filthy, the fertility of the eggs may be lowered. The yards should be kept clean and should have grass or other green crop growing on it, since a good range is a very important factor in securing good hatchability and strong chicks. The house should never be overcrowded; otherwise the fertility of the eggs will be materially affected.

The ration and method of feeding breeders is practically the same as for the remainder of the flock. It does not injure hens for breeding purposes to lay in the fall previous to the breeding season, provided they are given a complete rest period of at least eight weeks before they begin to lay again, and are fed a ration which includes all the necessary nutrients to make them healthy and vigorous. This ration for breeding hens has been used with success:

Scratch

50 lbs. cracked corn
30 lbs. wheat
20 lbs. barley

Mash Mixture

20 lbs. yellow corn meal
20 lbs. wheat bran
20 lbs. wheat middlings
20 lbs. ground heavy oats
5 lbs. dried milk
15 lbs. meat scrap
½ lb. salt

If more convenient, liquid or semi-solid buttermilk can be used in place of dried milk.

If more thought were given to the selection and care of the breeding stock, the ideals of more eggs from fewer hens and less mortality in chicks could be made a reality.

COOPERATION IN VIRGINIA

Cooperatives Pay Their Share of Taxes

The steady growth of cooperative associations throughout Virginia has been accompanied by growing opposition on the part of merchants and dealers who find their business possibilities curtailed by the rise of cooperative associations. Not only has the opposition sought to have the general assembly amend the cooperative marketing act by adding provisions which would severely cripple the development and operation of cooperatives, but they have sought to have added taxes levied on cooperatives. The claim is made that cooperatives are taxed on a different basis from merchants and dealers because they are distinctive service organizations operating on a non-profit basis for the benefit of the patron-members.

A Co-op Is a Group of Farmers Serving Themselves

A farmers' cooperative association is simply a group of farmers who have banded together to perform for the members of the group some service more effectively and cheaply than could be done individually. A farmers' cooperative association is therefore treated by local and state governments as a group of farmers when it comes to taxation.

If a group of farmers meet in their neighborhood school house, elect a secretary and give him their orders for a car of feed, seed, fertilizer or other commodity, neither the local nor state government levies any tax on the group or on the business they do. No merchant's license tax or produce dealer's tax is levied on a neighborhood group of farmers who buy supplies and sell their products through an elected secretary or manager. On what grounds should this group of farmers be taxed or the business done by their association after it is incorporated?

If this group decides that it wants to incorporate and gain the advantage of protecting the property of the individual members from being levied on to satisfy a possible debt of the organization by limiting the liability of each member to whatever amount he may individually owe the organization, they can incorporate by paying the usual charges for a corporation charter. The incorporated cooperative then pays the state an annual license fee of $10.00 in place of the franchise tax paid by profit-seeking corporations and an annual registration fee of from $5.00 to $25.00, depending on the capitalization. These are the usual state taxes for the privilege of operating under a charter from the state.

If farmers of a neighborhood get together and put up a tomato cannery or an apple packing shed to handle the marketing of their crops, they expect to have to pay the regular property taxes levied by the municipality or the county. Similarly an incorporated cooperative association pays local property taxes the same as other property owners for the services rendered to property by the local government.

If, after a neighborhood group of farmers has bought feed, seed or fertilizer through a secretary, and at the end of the year the secretary's books show that the expenses were less than what was charged the members, this saving is usually prorated back to each member on the basis of the value of the supplies he purchased through the group. An incorporated cooperative association operates in the same way. It distributes the earnings on the year's business back to the member-patrons as patronage refunds or patronage dividends in proportion to the value of the supplies each bought through the cooperative. Because a cooperative acts as agent for the members in buying supplies for them, in marketing their produce for them, or in performing various other services for the members and does these things for the members on a non-profit basis by distributing whatever earnings there may be back to the members on a patronage basis, neither the state nor federal government levies any income or capital stock tax on cooperative associations. Whatever net income the books of the organization may show belongs to the members and is distributed back to them as patronage dividends in the form of cash, or in the form of capital stock or some other evidence of their equity in the accumulated capital funds of the organization.

Co-ops Are Not Merchants

Many merchants claim that it is not fair for state and local governments to require them to pay the merchants' license tax and not require cooperatives to pay these taxes when cooperatives compete with the merchants for business. The merchants are particularly opposed to cooperatives being allowed to do business with non-members. The federal laws governing cooperatives and the laws of virtually all the states allow cooperatives to do up to 50 percent of their business with non-members, though, as a general rule, very few cooperatives do any business with non-members and those who deal with non-members do only a very small proportion of their total business with other than members. The laws allow cooperatives to do business with non-members because conditions sometimes are such that it is impracticable for the cooperative to refuse to serve non-members as well as members, and under other circumstances it is beneficial to both the non-members and the cooperative to be able to handle a small proportion of non-member business.

Cooperative associations do not operate as merchants, even when they do some business with non-members, and therefore are not taxed as merchants are taxed, and should not be. A merchant pays licenses to the state and local government for the privilege of engaging in the mercantile business as a connection between producers and consumers of products. He is privileged to charge whatever he can collect for his services. The only limit to the profits he can make is competition. He is free to retain any profits for himself as owner or for the stockholders who own the business. The state charges a license for the privilege of engaging in business and making profits which in effect is a tax on the producers and the consumers of the products handled by the merchant. The government, in exchange for the privilege granted the merchants, collects from the merchant's part of the profits in the form of the merchant's license tax and through the income tax.

Cooperative associations act as the agents of the members in buying and selling and perform these services on a non-profit basis. Whatever earnings are made are returned to the members. Cooperatives are therefore fundamentally different from merchants, and are therefore taxed on a different basis.

The Virginia Agricultural Situation

WHAT TO PRODUCE—HOW MUCH TO PRODUCE—WHEN TO SELL

Foresight springs from intimate knowledge of the past

Prices on Virginia farms, as reported by the Virginia and the United States Departments of Agriculture, show 6 increases and 4 decreases during the month. During the year the largest increase was in hogs, the greatest drop was in apples.

	VIRGINIA PRICE				RELATIVE PRICE *Compared with as of 100 during 1910-1914*		
	Nov. 15 1935 (now)	Oct. 15 1935 (mo. ago)	Nov. 15 1934 (yr. ago)	Average 5 years 1910 to 1914	Nov. (now)	Oct. (mo. ago)	Nov. (yr. ago)
Farmers' purchases (U. S. retail)					123	123	126
LIVESTOCK:							
Hogs, per 100 pounds	$9.10	$10.00	$5.50	$7.38	123	136	74
Beef cattle, per 100 pounds	5.90	6.30	3.80	5.21	113	121	73
Lambs, per 100 pounds	7.60	7.30	5.50	6.19	123	118	89
LIVESTOCK PRODUCTS:							
Farm butter, per pound	.23	.22	.21	.24	96	92	88
Butterfat, per pound	.27	.23	.23				
Wool, per pound	.24	.26	.24	.22	109	118	109
Eggs, per dozen	.32	.30	.30	.20	160	150	150
Chickens, per pound	.17	.17	.14	.14	121	121	100
CROPS:							
Wheat, per bushel	.96	.97	.98	1.00	96	97	98
Cotton, per pound	.116	.110	.122	.115	101	96	106
Potatoes, per bushel	.65	.55	.70	.84	77	65	84
Sweet potatoes, per bushel	.55	.45	.55	.77	71	58	71
Apples, per bushel	.55	.55	.75	.62	89	89	121

PROCESSING TAXES— REAL AND IMAGINARY

(Continued from page 7)

ing about a cent and one half a pound, and farmers are getting less than a cent a pound. In 1930, for example, consumers paid 3.6 cents a pound. I just don't believe that consumers want bargain foodstuffs when they know the farmer's shirt goes along with the bargain.

"It is so easy to forget what prices were a few years ago. It seems to surprise many people to learn that food prices today are considerably below the 1929 level."

A study of our national resources, more comprehensive than any previously made, shows the vast amount of necessary and practicable work which needs to be done for the development and preservation of our natural wealth for the enjoyment and advantage of our people in generations to come.

—Franklin D. Roosevelt

Winter is a good time to study fertilizer needs.

VIRGINIA AGRICULTURAL AND MECHANICAL COLLEGE AND POLYTECHNIC INSTITUTE AND U. S. DEPARTMENT OF AGRICULTURE, Co-operating
EXTENSION DIVISION, JNO. R. HUTCHESON, DIRECTOR, BLACKSBURG, VIRGINIA

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A CHALLENGE TO EXTENSION WORKERS

O. E. Baker
United States Department of Agriculture

It seems to me that the greatest task ahead of the agricultural agencies in the United States is to help revive the rural spirit among many farming people, and make them proud of themselves, their children and their ancestors. By rural spirit I mean the spirit of initiative, independence, industry, thrift, frugality, honesty, courtesy, sympathy, cooperation, mutual help, and sacrifice, particularly the willingness of parents to sacrifice for their children. This spirit characterized the people in western Ohio I knew in my childhood and, I believe, still characterizes many rural people today. Urban influences during and since the World War particularly have tended to substitute the goal of individual success, notably in commercial fields, and of luxurious living, for that of success in raising a family and serving the community and the State. The urban philosophy of life, as reflected in a birth rate that will soon induce a rapid decline in population, evidently is ephemeral; the rural philosophy of life, as expressed in the farm family and community, is eternal, —derived from the experience of the race down through the ages.

The second great task, as I see it, is to reach the poorer half of the farmers,—the 49 percent who produced less than $1,000 worth of products in 1929. Many of these have not been reached effectively as yet by the Extension Service. This, too, is a very difficult task, but it must be done. The numerous children in the poorer regions will almost certainly become in increasing degree not only the citizens of the cities, but also the farmers on the richer soils. The meek shall inherit the earth, or at least acquire the use of it. Recently it has occurred to me that the regular extension work needs to be supplemented with a type of worker that was, perhaps, more common in the early years of its development—a man who can approach the problems of rural life and organization, not alone with technical knowledge, but also with sympathy and enthusiasm.

In this connection I believe it would be well to give increased attention to the rural churches, and aid them in every way possible. The church is the only institution that survived the decline of the ancient Roman Empire, and doubtless its teachings are in no small part the result of that experience. Looking forward not 10 years, but 25 to 50 years, when the population of the Nation is very likely to be declining, I see not only a contraction in the commercial market for farm products but many other difficult adjustments to be made by agriculture. The church may become almost invaluable then in sustaining the spirit of the rural people.

We need to consider more fully the economic consequences of our social ideals, particularly the ideal of "standard of living," which is not infrequently measured by "conspicuous consumption." Most of our rural

(Continued on page 2)

COOPERATIVE CREDIT APPEALS TO FARMERS

W. T. Myers
Farm Credit Administration

Financial precedents may be set in Wall Street according to common belief, but so far as mass attendance at stockholders' meetings is concerned, farmers have chalked up a new world's record. Over 185,000 farmers attended the last series of stockholders' meetings of farm loan and production credit associations, most of them held during the past six months. The increase in attendance is roughly 50 percent ahead of the 1934-35 meetings.

Giving physical proof of the keener interest in cooperative endeavor so evident since the depression, unusually large numbers of farmer-stockholders have turned out to vote in association meetings, and have brought nearer to realization the idea of borrower-management and control than at any time since the original farm loan act was passed in 1916.

Some 101,541 farmers attended meetings of 3,826 farm loan associations, and the more recently organized production credit associations drew a record crowd of 83,934 at annual meetings held since January 1 by 520 associations.

Contrasting sharply with the city investor who signs away by proxy the voting privilege on billions of dollars of stock, farmers have taken literally the voting right of stock-ownership in the Federal land banks and production credit associations and are beginning to wield a tremendous influence in the direction of the farm credit system.

National farm loan associations are the credit cooperatives through which the Farm Credit Administration has loaned a large part of the $2,000,000,000 advanced on farm mortgages during the past three years to refinance farm debts on more liberal terms.

The associations—at least one in practically every county—have guaranteed most of the $1,161,000,000 of first mortgage loans made by the Federal land banks and acted as agents in lending a large part of the $850,000,000 of emergency refinancing loans of the Land Bank Commissioner. Voting stock in the association equal to 5 percent of his loan is purchased by every Federal land bank borrower.

The farmer-ownership feature of the farm loan system was clearly outlined when the original farm loan act was passed in 1916, but with the tremendous growth of the Federal land banks since the depression, the matter of farmer-participation in management and control has assumed a new significance.

Built along somewhat the same lines as the farm loan associations, the newly organized but less numerous production credit associations making crop and livestock loans have attracted the attention of an even larger percentage of stockholders who have turned out to exercise their credit franchise. Here, too, the borrower owns stock equal to about 5 percent of his loan and participates in the election of directors of the association, hears reports and feels at liber-

(Continued on page 3)

PART YOUNG PEOPLE CAN TAKE IN EXTENSION PROGRAM PLANNING

W. A. Lloyd, Extension Service,
U. S. Department of Agriculture

We hear much of agricultural planning,—of national, regional, State, and county agricultural program making. Every good farmer has a well-thought-out farming system, not only for each particular year, but also a planned rotation over a series of years.

Agricultural extension has been much given to program making. Indeed, man might be defined as the planning animal. In spite of the old Hebrew proverb that tells us to "take no thought of tomorrow," most of our time is taken up in doing just that. The Scottish poet, Bobbie Burns, thought

"The best-laid schemes o' mice an' men,
Gang aft a-gley
An' lea'e us naught but grief an' pain
For promised joy!"

But in spite of that, we do keep on making them. Perhaps, as Kipling says, "If you can dream and not make dreams your master," it is all very well.

There is one element in our poulation that might be called the master planners. These are our young men and young women. They are standing on the doorstep of the future and much of their time is devoted to wondering what lies beyond. This may be merely day-dreaming, but often, too, it is the serious planning of their lives. In extension work we are just beginning to give particular attention to this group of young men and young women from about 17 to 25 years of age that lies between boys' and girls' clubs on the one hand and the adult demonstration groups on the other. "Junior Farm and Home Demonstration Clubs," they are most aptly called, though there are a variety of local names, such as junior farm bureaus, junior adult clubs, service clubs, farm science clubs, Utopia clubs, etc. They are just beginning to be a recognized force in agricultural program making and often take a major part in planning the recreation, social, and rural beautification phases of a community extension program.

In New York a committee of a Junior Farmers' Club representing four communities was called together. They spent a whole day sitting around a table in the county agricultural agent's office, discussing and listing the things which they might do. Toward the end of the meeting they selected what they thought would be most useful. These included: taking a farm inventory, keeping cost accounts on the home farm, a study of the agricultural outlook, discussion of new and improved varieties of stock, father and son partnerships, and poultry raising.

In Wisconsin 26 members of a Young Farmers' Club have organized a program for the study of legal papers relating to farming, farm debt, contracts, and farm management.

In Hawaii, where the work with the young men and young women has been on a definitely organized basis for some five years, a

Junior Farm Demonstration Club composed of Japanese-American young men take charge of such rural events as Fourth of July celebration, the 50th anniversary of the coming of the Japanese to Hawaii. They are interested in coffee and sugar production. These young men like to be considered doing something worth while—a man's job.

This work with young men and young women is one of the most significant recent developments of extension work. What finer thing is there than the family council where father and mother, son and daughter, all make their contribution to the farm and home plans; and what more pathetic thing in life is there than the young man and young woman just budding into adult life who are too much just taken for granted, who are suppressed and given no opportunity to express themselves.

In Oregon, the young people, through their clubs, demonstrated that they had a real contribution to make in the county economic planning for agriculture. In our economic and social planning for the future we would do well to make a much larger use than we are of these young men and young women. After all, it is their world we are planning. The success of the plans now being made will largely depend on the attitude of the farmer and homemaker of tomorrow toward them. They will have a better understanding and appreciation of them if they help make them. Are the young men and women of your community an asset or a liability? Are they an organized part of the community life or are they just drifting? Perhaps, instead of being irresponsible, as they are often thought to be, they are only hungry for a little recognition—for an opportunity to do their part in community planning and community work. Like livestock in that critical period between hay and grass, if not given attention they may be found leaping over the traditional fences. Give them a chance to dream and a chance to help make their dreams come true.

A CHALLENGE TO EXTENSION WORKERS

(Continued from page 1)

counties, apparently are buying more than they are selling, measured in money. As a result of these expenditures for luxuries and of the drain of wealth from farms to cities involved in the feeding, clothing, and educating of children who migrate to the cities, the settlement of the estates on the death of the farmers, and the resulting payments of interest and rent, the farmers of the Nation are slowly losing title to the land. This is not a development during the depression only, but a long-time trend.

In the United States as a whole the proportion of the total value of farm real estate operated by tenants increased from about one-fifth in 1880 to over one-third in 1930, and the debt on all farm real estate operated by owners increased from about 10 percent in 1880 to over 20 percent in 1930. After subtracting the value of farm real estate operated by tenants and the amount of debt on farm real estate operated by owners, it appears that considerably less than one-half of the value of farm real estate was really owned by farm operators in 1930. I surmise the proportion is even less today. In Illinois, Iowa, and South Dakota in 1930 over 70 percent of the farm real estate was owned by some one else than the farm operator, and in Missouri, indeed in most other States outside the Northeast and the Pacific Coast, the proportion exceeded 60 percent.

Can this trend toward loss of ownership of the land by the farm operator and transfer of title to people living mostly in the cities be reversed? Can the apparent trend toward concentration of ownership or urban property also be reversed? One-half the real estate of Chicago was transferred between 1929 and the autumn of 1933 as a result of mortgage debt or other foreclosure proceedings, according to the study made by Homer Hoyt. Can the people be assured that economic security which prudent men realize should precede the responsibilities of the family? Can the decline in the birth rate be reversed? Not, in my opinion, without a change in the ideals of the people.

The development of science and the advance of invention, which have so multiplied the power of men to produce goods, have not diminished the need to maintain the integrity of the family and exercise the ancient virtues of thrift and sobriety. With a nation, as with an individual, it is not difficult to dissipate great wealth. Probably never in our Nation's history has wealth been consumed at so rapid a rate as during the last five years. The soil resources are being depleted by erosion, oxidation of the humus, and removal of the essential elements of fertility,—nitrogen, phosphorus, potassium, sulphur, and calcium—in the crops and livestock or livestock products, at an accelerating rate. The houses, factory buildings and business structures of the Nation have probably deteriorated in real value during the depression. The human resources, as measured by the inflow of children, have declined over 20 percent during the past decade. The Nation's wealth is normally about five times the annual income. Only a few years of economic and social disorganization are required to deplete seriously the wealth of a nation. Nations have fallen in the past not through lack of knowledge of how to produce goods, but primarily because of a short-sighted philosophy of life, and the development of an economic system which undermined the family.

We must recognize that the present economic system and associated social ideals have acquired during the past century almost overwhelming momentum. If the trend toward extravagance, economic insecurity, and depopulation can be reversed at all, it will be among the rural people. And it will come only through the spirit of sacrifice, in my opinion, particularly sacrifice for the sake of children. This spirit of sacrifice should be extended to the community and the State, and find expression in economic and social cooperation and in patriotism. The past should be recognized as worthy of respect and the future as more important than the present.

HOME DEMONSTRATION NEWS

All over the country farm women are figuring ways and means of getting to Washington for the first week in June. Virginia women are deeply interested in this meeting which is the Third Triennial Conference of the Associated Country Women of the World. The official conference lasts from noon June 1 through June 5.

This association of country women of the world links together in friendly and helpful relations women's institutes, homemakers, home demonstration organizations and individual country women. It comprises some forty nationally organized associations in over thirty different countries in the five continents of the world. The state federation of home demonstration clubs of Virginia is affiliated with this association.

It is expected that over a hundred women representing various home demonstration clubs over the state will attend the Washington meeting. They are looking forward to an opportunity to meet and talk with country women from England, Denmark, France, Czechoslovakia, Australia, Africa, Ceylon, and many other nations.

In 1929 a preliminary meeting of the associated country women of the world was held in London; in 1930 an organization was formed in Vienna; and in 1933 the association met in Stockholm.

The conference will begin informally Sunday, May 31, with a vesper service in the Washington Cathedral, after that a tea. At noon Monday, June 1, the Secretary of State and Secretary of Agriculture will extend formal greetings to the delegates and Mrs. Roosevelt will address the conference. There will be responses from Lady Aberdeen of Scotland, honorary president of the organization, and from Mrs. M. R. Watt, president of the A. C. W. W. Later in the afternoon President and Mrs. Roosevelt will receive the delegates at a garden party at the White House.

Among the general topics scheduled for discussion at the conference are, "Safer Motherhood," "How Rural Women are Meeting Their Economic Problems," "Cultural Interests of Rural Homemakers," and "International Relations as they Affect the Rural Home."

Another item of interest will be a series of playlets and exhibits showing how our Federal Government extends educational services to all rural homemakers through the extension services of the Department of Agriculture and the land grant colleges of the forty-eight states, Alaska, Hawaii, and Puerto Rico.

One evening will be devoted to a program of music and folk dancing. Many visitors from overseas will wear their national costumes; the women from English-speaking countries will wear period costumes. There will be folk songs and dancing.

This is a wonderful opportunity for home demonstration folks in Virginia, since we are so nearby, and we cannot afford to miss this conference of the associated country women of the world!

The second annual meeting of the district federation of home demonstration clubs was held in Richmond April 7; in Madison April 8; and in Lynchburg April 9, with about 1500 women attending these meetings, this in spite of very bad weather. This attendance, and the active interest displayed by the women in the programs, bespeaks the growing attention which the rural women of Virginia are giving to matters pertaining to organization.

The highlights of the eastern district meeting were: A talk by Mrs. Fred Alexander, president of the sister organization of women's clubs, and a talk by Miss Edith Orr.

The special feature of the Northern Virginia district meeting was the division in the afternoon into two discussion groups in which many of the women participated. Mrs. June Fickel, a farm woman from Iowa, opened the discussion on "Good Citizenship" and Mrs. Janet Stuart Durham, of Richmond, and Mrs. Henry Holloday, of Orange, led the discussion of "Highway and Home Beautification."

In the Central district particular interest centered around the discussion on "Social Security," led by Mrs. George Winn, of Henry county, and "Our Rural Marginal People" led by Mrs. C. L. Hall, of Halifax. Mrs. Ben Wailes, of Sweet Briar, led the discussion on "Rural Libraries" and Miss Ella G. Agnew, of Richmond, gave a most interesting summary of the 1936 legislation of interest to homemakers.

Unless it is in a tightly sealed container, honey should be stored in a dry place.

Uncle Ab says that the way to get ahead is to use the stumbling blocks as stepping stones.

DAIRY EXTENSION NEWS

BUILDING A HERD FOR FUTURE PROFIT

The future production of any dairy herd is just as important as its present production, to the dairyman who is developing a permanent business. The methods and equipment in use, including the herd, is, however, tending to make the future highly speculative. Dairymen who have high producing cows, bred-up through generations of careful selection on the basis of yearly production records, and who are now using meritoriously proved sires, are in an excellent position to raise the kind of herd replacements that will maintain herd production at a constant high level. It is the concentration of inheritable high production traits in the herd that is of fundamental importance in developing a superior dairy herd. Lacking the natural ability to produce large quantities of milk, no amount of care in management and feeding will overcome the handicap.

It never pays to raise scrub cows any more than it pays to milk them. The great difficulty, however, lies in the fact that so many dairymen raise or buy herd replacements about which there is little or no information available regarding the probable influence the replacements may eventually have upon the herd. It is recognized that the dairyman is often a victim of circumstances over which he has no control; for example, new animals frequently bring into the herd undesirable inheritable productive traits. The process of concentrating and building up the inherent productive ability of the herd is the most serious problem before the dairyman. Every time new blood is brought into the herd, either by new herd sires or new cows, the original genetic pattern of the herd is changed. The degree to which the herd may be affected by the introduction of replacements is not usually apparent until several years have passed, or until offspring have come into production to demonstrate the transmitting ability of the animals in question. This is a complicated problem, but it is one which lends itself to practical solution as is now in evidence on many dairy farms.

When the ancestors are good producers and of good body conformation, efficient calf raising is the least expensive and the most dependable method of securing high quality herd replacements. Disease exacts a heavy toll, once it strikes a herd, and it is a hazard that increases in importance as dairy herds become larger, and as the cows become better producers. The only safe and practical way of safeguarding the health of the herd and maintaining an uninterrupted breeding program is by raising heifers instead of buying cows.

An experienced dairyman will not knowingly sell his better cows except for a high price, or because they are no longer useful to him. How then, we might ask, can a dairyman who replenishes his herd by purchasing replacements expect to develop a good herd when the cows he buys are mostly the culls from other herds? It appears that the only time a dairyman is justified in buying cows is when he plans to raise a herd from a choice group of foundation cows, but even then it should be remembered that the buying of heifers and cows is highly speculative at best, and much culling may be necessary to establish the kind of production and type inheritance desired in the herd.

Important as it is to protect the health of the herd and to build up its inherent productive ability through careful breeding, it appears that the poor environment on some farms places a direct limitation upon both the health and the productiveness of the herds. The under feeding of both calves and growing heifers is responsible in itself for more loss than is generally realized. Observant dairymen know that liberal feeding will hasten maturity in a growing animal, but the failure to consider the relation which thrifty, quick growing calves and heifers bear to profit, in contrast with calves and heifers raised on scant rations, accounts for the stunted heifers and undersized cows generally evident in dairy herds. Since many herd records have shown that the larger cows within a breed return more profit than small cows, it appears that unless the dairyman takes full advantage of the strong growth impulse which exists in all young calves by correct feeding and management, he must not only suffer loss because of delayed maturity, but very often he must suffer loss due to reduced productive capacity, less economical production, and less profit, characteristic of stunted cows.

THE FUNDAMENTALS OF FEEDING CALVES FOR GROWTH

A good dairy cow cannot produce milk economically on scant rations, neither can a calf or heifer grow normally on deficient rations. Just as a liberal, well balanced ration is essential to a profitable milk flow, so is a liberal, well balanced ration necessary for the high rate of daily gain which is essential to the successful and economical raising of calves and heifers.

About two-thirds of the ration fed to a growing heifer is used simply in maintaining her body, while one-third of the ration goes for growth. Of course, if the ration is scant, three-fourths of the nutrients might be necessary for body maintenance, while only one-fourth is available for growth. Considered from this standpoint, a scant ration fed to growing stock is not only expensive in terms of the growth obtained, but it also makes the cost of maintenance excessive.

Since such a large proportion of the feed cost of growing a heifer goes for body maintenance, the faster the heifer can be grown to the desired size, the shorter will be the time over which it will be necessary to maintain her, and less will be the cost of growing her, because the same amount of feed will be necessary for growth over the amount required for body maintenance, no matter how long her period of growth might be. If a liberal ration is fed to insure rapid growth from birth, the heifer can be bred early and will attain her mature level of production earlier, hence will be more profitable, due to the feed and time saved in attaining mature growth. In other words, the first fundamental principle of successful calf raising is to start the calves quickly and help them grow so that they may attain the desired size and development by the time of the first freshening.

Young calves should be fed whole milk during the first four weeks of life; after that time skim milk with grain and hay, or a special dry grain calf mixture and hay, can be gradually substituted for the whole milk, thus effecting a considerable saving in feed cost. In any change thus made, it is essential that the change be made very gradually and that the feeds comprising the new ration be of good quality, highly digestible, a proper substitute for the milk displaced, and fed liberally.

One method of raising calves, known as the "New Jersey Dry-Fed Method," which has proved very satisfactory over a period of years in areas producing milk for the fluid milk markets, is:

"Allow the calves to remain with their dams during the first 48 hours, then —

First week — feed whole milk, three times daily, up to three quarts per day

Second week — feed whole milk, dry grain mix, and good alfalfa hay freely

Third week — feed whole milk, dry grain mix, and good alfalfa hay freely

Fourth week — dilute the milk with gradually increased quantities of water, each day, substituting water for the milk, until at 30 days the calf is receiving only water, dry grain mix, and alfalfa hay

From fifth week — feed dry grain mix once a day (all the calf will clean up in 24 hours). Give alfalfa hay twice a day (all the calf will eat). Let the calf have free access to water at all times. Increase the grain mix a little each day until the calf is receiving 6 pounds a day, then continue feeding at this rate until the calf is 6 months old.

The grain mixture consists of 100 pounds of yellow corn meal, 150 pounds heavy ground oats, 50 pounds wheat bran, 50 pounds linseed oil meal, 50 pounds high grade soluble blood flour, 4 pounds each pulverized steamed bone meal, pulverized limestone, and salt."

Calves raised by this method become accustomed to a grain and roughage ration at an early age and, when six months old, the blood-flour mixture can be displaced by a grain mix consisting of 30 pounds cracked corn, 30 pounds crushed oats, 30 pounds wheat bran and 10 pounds linseed meal, to be fed along with good legume hay and corn silage, or with pasture.

Since new pasture grass is very low in dry matter, calves under six months old should not be turned out on pasture. Calves six months or older should receive grain in addition to pasture, and perhaps some supplemental roughage, depending upon the quality of the pasture; if the calves are to be kept growing at an uninterrupted rate.

COOPERATIVE CREDIT APPEALS TO FARMERS

(Continued from page 1)

ty to join in open discussion of association business.

Due in large part to the record turn-out at annual meetings of production credit associations held in January and February, the lending operations of these organizations has hit new high levels this spring. Over 102,000 farmers obtained cash loans in the first quarter of 1936, and the outstanding volume aggregated $116,000,000 on March 31.

Contrary to the universal practice with private corporations, there is no proxy voting in farm loan or production credit associations except in limited instances, such as when a husband may vote the stock of his wife if both are borrowers.

The increased attendance of farmers in these associations should help to clear up a debtor-creditor complex which has vexed agricultural financing for many years. Each association member is a debtor, since he has a loan, but since he is also a stockholder in the association, and has an interest in maintaining his investment, he is also a creditor. His stock, in fact, is his investment in the farm credit system. Thus the farmer is both borrower and lender, and this should result in better understanding by creditors of debtor problems and vice versa.

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.

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RURAL POETRY

Caroline B. Sherman

Bureau of Agricultural Economics, U.S.D.A.

Rural poetry to me means poetry that deals with the farm and with farm people. Nature has been an inspiration to poets of every kind and it has its effect on rural verse, too. But poems of nature alone do not make rural poetry.

Almost from the time American poetry was worthy of the name, a part of it has been devoted to the farm or rural neighborhood. Whittier was probably the first rural poet that many of us knew, with his whistling *Barefoot Boy* and his well-beloved story of an isolated farm family in *Snow-Bound*. The richness of family life at its simple best is there, for Whittier is the true farm and fireside poet. William Cullen Bryant and Longfellow, among other famous writers of that period, occasionally wrote country verse.

Others found their first rural poetry peculiarly close and interesting because it was written by two little farm girls up in the Berkshires—Elaine and Dora Read Goodale. Their verses of Sky Farm and the thoughts it fostered were taken up by exacting New England publishers. Three volumes, *Apple Blossoms, In Berkshire with the Wild-flowers*, and *All Round the Year, Verses from Sky Farm*, were treasured volumes on childhood shelves. After years devoted to work among the Indians and the Southern mountaineers these sisters again publish rural poetry, Elaine (now Mrs. Eastman) in her *Voice at Eve*, and Dora in her latest book *Test of the Sky*.

Farther to the South the early favorite among the rural poets was Sidney Lanier. He has been called the original southern agrarian. Although tinged with the mystical and always melodious, he was clear-sighted in his feelings and warnings against commercialism. His poem *Corn* is perhaps his best of this kind.

Following this lyrical period came the widely popular home'y ballads related to the farm. John Hay's *Pike County Ballads* led the way. They were followed by Will Carleton's *Farm Ballads* and *Farm Festivals* and James Whitcomb Riley's many poems devoted to farm people, farm industries, and neighborhood life. Riley has been called the People's Laureate.

These writers broke away from the more classic earlier forms. They used every-day American words and phrases, and their verse was usually straight narrative or it described events and scenes that were generally recognized as native and true.

These writers were mostly in the Middle West, but in the South Frank L. Stanton—sometimes called the people's poet—was writing in much the same way, in Massachusetts John Savary was often describing farm life and scenes in his verse, and in New York State John Townsend Trowbridge was writing appealing farm poetry typified by his *Evening at the Farm*.

Then came a period of virile American verse by such writers as Vachel Lindsay, Carl Sandburg, and Robert Service. It dealt with phases of the frontier world rather than with the farm, but I want to mention it here as definitely related.

Today some of the rather similar writing by Robert Tristram Coffin, and Edwin Arlington Robinson (who has had several Pulitzer poetry awards), may be classed among the rural poetry. Much of the other current rural verse is excessively rugged.

Jesse Stuart's *Man with a Bull Tongue Plow*, a recent book of nearly 700 ballads dealing with the life and people of the Kentucky hills, and Paul Engle's *American Songs, A Book of Poems*, are examples.

This robust development in verse is closely related to the emphasis on realism in fiction. In verse, as in fiction, such emphasis is easily overdone. As we have for so long looked to poetry for melody, for music, for sheer delight, we perhaps regret the overplay of realism in poetry more than we do in fiction.

A few fragile rural poems are still written and appreciated. The John Burroughs Award is given annually for the best piece of nature writing of the year. Usually it goes to well-known naturalists. Two years ago it went to a genuine New York farmer, W. W. Christman, who had not found time to write until he was 60 years old. After his lyrical *Songs of the Helderhills* and *Songs of the Western Gateway*, his third little volume called *Wild Pasture Pine*, brought this surprising recognition.

One American poet combines the rugged and the musical with a heart-warming success—Robert Frost. Read his poem on *The Death of the Hired Man*. Verity, humanity, and poetic worth make it a small and homely masterpiece. Among his volumes, *New Hampshire* and *Collected Poems* have both received the Pulitzer poetry award. Although he holds informal talks on literature with selected students at Amherst College, he is still a real farmer. His home is on the third New England farm that he has worked with his own hands. Gertrude Stein, on her much-discussed visit in America last winter, said, "If Mr. Frost is good as a poet, it is because he is a farmer—really in his mind a farmer." And although his writing is almost exclusively rural, I believe we can safely say that Robert Frost is a general favorite among American poets.

I WANT TO BUILD

(Reprinted by request)

I want to build a house to endure. A house of generous size and low-flung roofs, caressed by the gentle shade of great trees, where Permanence and Strength shall be reflected. A house where little voices may babble in the ecstasy of babyhood, and grow to the full blush of youth, and, in the fullness of Time, come to maturity, and age, and grow old, and nod, and sleep. A house where my children's children shall be nourished and fed and protected by these same walls which have sheltered and protected me.

I want to build these little lives which have rooted in the garden-soil of my soul so that they, too, shall endure. Build them so that they will know the glory that Love is, the joy that Happiness is, the peace that Contentment is. I want to root them in the eternal truths and nourish them with the true ideals of usefulness and service. I want to build them unafraid—gentle as the daisies nodding in the fields, sturdy as the rock-ribbed hills, strong as Love.

I want to build a garden where Loveliness dwells. A garden where the lingering pictures in Memory's eye come into being and all the dreams I have dreamed of Paradise nestle at my feet in my own doryard. A garden where mine enemy dare not come lest he, too, be claimed into forgiveness. A garden where the divine laboratory of Eternity lies in my hand and speaks in untold tones the delights, the mysteries, the wonders of the Hand behind it all.

I want to build a home where Love will dwell. A home valued not by the dollars it cost, or the richness of materials or furnishings going in to it so much as by happiness it has created. A home which has grown dear and near because of the stress and storm it has weathered, the tears it has dried, the smiles it has caused. A home where patience and effort and denial have brought their treasures of happiness and contentment and peace. A home where Love comes like the fluttering dove, and perches and dwells—unwilling to search elsewhere. I want to build a Home!—CHELSA C. SHERLOCK.

The foregoing expresses in beautiful language the dreams, the hopes, the aspirations which must burn as an eternal fire in the hearts of people on all the farms of Virginia if rural life is to be rich and full and free and if coming generations are to make and keep Virginia a great progressive state.

The first and chief prerequisite is that the agricultural land of the state shall be considered a cherished and sacred resource that should rightly belong only to the people who live on the land and should be removed from speculation. The welfare of the people and the future of the state require that by some means the ownership of the land shall be returned to the people who live on the land and who till the soil and that they use it in the building and maintenance of permanent homes and in the production of those things which other people require.

SEZ

Secretary of Agriculture Wallace: "The soil-conserving class of crops are those which give the land protective cover, tend to hold it in place and to prevent losses of fertility. These include grass and legume crops when pastured and winter cover crops which are followed by legumes."

President Roosevelt: "The history of every nation is eventually written in the way in which it cares for its soil."

C. B. Smith, Chief of Extension Service: "It is to the local extension leaders—men and women who have an ability to cooperate, who have successfully demonstrated their faith in rural life, and who can stimulate others—that we offer our thanks and appreciation, echoed by every extension worker . . . . We cannot reward them as they deserve, but we know that they find their reward in the satisfaction of serving and of offering a friendly hand to their neighbors and to us."

Erwin H. Shinn, Extension Service, U. S. D. A.: "Over half of the young people of the nation are rural young people. They are certainly one of the nation's chief assets. American farm families have, in the past, furnished much of the nation's leadership in all walks of life. The present decline in birth rate in towns and cities indicates that from our rural population must come a considerable number of the future leaders in the centers of population. Seeing to it that rural young people are well trained is important to the cities as well as to the open country.

"The farm and the open country offer many advantages for the training of future leadership. Farm young people have the privilege of a close association with nature. They learn about life as it functions in the natural environment. They learn automatically the simple scientific principles of plant

and animal growth. But perhaps best of all they learn to do by doing, by helping brother or sister, father or mother to carry on the farm or home work. These splendid opportunities for forming character and gaining skill come to farm youth daily in their home environment."

Secretary Wallace: "The outlook for agriculture is bright. But keeping it so will depend upon maintaining the present healthy supply situation, reopening further the channels of world trade, conserving the fertility of the farm plant, and developing the latent home market. This last can only come from increasing the buying power of the large groups of people who now have little or nothing to exchange for goods. To give them employment and earning power is a problem challenging the best leadership and the sincerest thought of industry, of agriculture, and of government.

"To meet this challenge, we need more than ever the spirit of interdependence and unity in which our nation was founded. Without this spirit, we will be defeated by selfish pressure groups and narrow legalisms. With it, we can go forward to new national achievements securely founded on the general welfare."

JOHNS GOES TO TENNESSEE

Melville M. Johns, of the agricultural engineering department, Virginia extension division, has been appointed assistant agricultural engineer for the Tennessee extension division with headquarters at Knoxville and began his work there May 20. For the last year Johns has been acting as farm building specialist in Virginia in place of H. H. Gordon, who has been on leave for work with the rural resettlement project, and is well known throughout the state. He is a graduate of V.P.I. and for several years after leaving college was employed with the Virginia Electric Power Company in Richmond.

RURAL COMMON SENSE

By Spuds Johnson

LESSON OF THRIFT, LEARNED RECENTLY, NEEDS REMEMBERING

Private John Allen, famous 30 years ago as a Congressman from Mississippi, was making a speech in Congress in an effort to have a fish hatchery started at Tupelo. "There are millions of little fish there, just waiting to be born," he said in a burst of oratory for which he was noted.

With the "late lamented" depression, there are numbers of lessons just waiting to be learned and, most important of all, remembered.

One of the most important of these is thrift. Americans in general have been noted for extravagance and recklessness. When this country was first settled, our ancestors found a land "flowing with milk and honey" and we have been enjoying the benefits of it ever since. But we have used the fruits of this land of plenty and enjoyed its blessings often without regard for the future and sometimes with detriment to ourselves. We have squandered both natural and acquired resources.

During the last three years we have been forced to think much of our lack of thrift. We have had thrift forced upon us. We have had to take stock of ourselves and our conditions, and study to see wherein we could improve. The character of a people is strengthened by thrift, and if these lessons will stay with us, we shall be the better as a result of the rude awakening which the depression gave us.

HORTICULTURE

STOP THE FIRST CODLING MOTH BROOD AND SAVE THE CROP

"A stitch in time saves nine" is an old saying which finds its fullest application in codling moth control. It has a double significance in seasons such as we are having this year when, because of some injury from low temperatures, and in orchards where the bloom is not heavy; growers are very apt to feel that there is not sufficient fruit left to warrant putting on the full spray program. Consequently, there is a tendency to cut corners in spraying, or in other control measures.

As the season advances, and the fruit takes on size, the grower usually finds that his early estimates of the crop are falling considerably short of the amount of fruit that will be in the orchard at harvest time. By this time he realizes also the mistake that he has made in not keeping a protective covering of spray on his apples. It is not surprising to find that the worms have walked through a large percentage of the crop at harvest time, with the resulting large pile of cull fruit, which will not only glut markets and lower prices, but will mean a heavy carry over of worms to endanger future crops.

Growers should, therefore, make a very close check-up in their orchards before making any reduction in the spray program which may result in losses later in the season, and in the years to come when economy in production will be more important than ever.

Growers are urged to concentrate on the control of the first brood of worms and, for this reason, the early cover sprays should not only be put on at the proper time, but in a very thorough manner, with special attention directed to the covering of the tops and the insides of the trees. It is like the old saying "save the surface and you save all." In the case of the apple grower, it is "Stop the first brood of worms and save the crop."

CHEMICALLY TREATED CODLING MOTH BANDS

(A. M. Woodside, Assistant Entomologist)

Increased difficulty in codling moth control and the growing problem of spray residue removal have stimulated interest in measures other than spraying for bringing down the infestation of this insect. Among these, is the use of chemically treated bands on the trees. Two years of experimental work in Virginia have shown the value of these bands where the infestation is heavy. Where trees are well scraped, they will capture from 50 to 70 percent of the worms. As many as one thousand worms have been captured on one tree by bands.

These bands are coated with a chemical that kills the worms which spin up within or under the bands. It is not necessary that all the worms be killed for the bands to be satisfactory, as those worms which enter in the fall will remain in their cocoons until the following spring and can be destroyed by burning the bands during the winter.

There are three important requirements for best results with bands. The first of these is proper preparation of the tree; the second is the use of a good band; and the third is proper application of the bands to the trees.

By preparation of the trees we mean thorough scraping of the trunk and larger limbs to remove loose bark, cleaning out all cavities, smoothing up all irregular pruning scars and stubs, and cleaning out of undergrowth beneath the tree. Since the worms normally spin up under scales of bark, these must be removed or the worms will not reach the bands. The same is true of cavities and stubs of limbs. It has been found in one case that on well-scraped trees 70 percent of the worms were under the bands; and that on unscraped trees only 30 percent were captured. In this case, more than half of the job would have been left undone if the trees had not been scraped. As some worms are in apples which fall to the ground, and others fall or spin down to the ground, these worms must seek a place to cocoon. When the ground is bare, many of them will find their way back to the tree; but where there is a heavy growth of vines, such as honeysuckle or poison ivy, very few will do so. Therefore, such undergrowth should be removed. This growth probably provides an ideal place for the worms to spend the winter, as they would have more protection from birds and cold weather.

For scraping the trees a curved blade pruning saw is a good implement. Some growers recommend a curry comb. A good scraping tool may be made from a piece of 12-gauge steel, 8 inches long and three-quarters of an inch wide. It is bent at right angles in the middle, and one side is bent slightly about an inch from the end so that it is in the form of a curve. This side is ground sharp along both edges and the end. The other side is ground down and a handle applied.

In purchasing bands the most important consideration is the amount of chemical coating which they carry. The state insecticide law requires that all bands sold in the state carry a label giving this information. Do not buy bands unless they carry such a label. These bands usually come in 250-foot rolls. Such a roll should have a coating of six pounds for a two-inch band, nine pounds for a three-inch band, and twelve pounds for a four-inch band.

Under Virginia conditions a two-inch band has been found to be almost as satisfactory as the wider ones. Where the infestation is exceedingly heavy, as is often the case in the vicinity of packing sheds, it is desirable to place a two-inch band around the trunk, and similar bands around the scaffold limbs.

The bands must be fitted around the trunk or branches and tacked into any grooves or depressions, as some of the worms will pass by bands which do not fit snugly. Bill poster tacks are the best for attaching the bands. They have heads large enough not to cut through the paper, yet are not long enough to make their removal difficult. They should be driven in only far enough to hold the band in contact with the bark.

The bands should be allowed to remain on the trees until after the apples are harvested and the ground cleared of drops. Then they should be removed and burned to destroy the living worms which they contain. If any living worms adhere to the bark under the bands when these are removed, they should be killed by crushing.

In order that the bands be most effective, it is necessary that they be in place on the trees not later than June 5. Do not wait until the horse is stolen before you put the lock on the stable.

Uncle Ab says the more you have the more you need to know; only the man with a car has to learn the parking regulations.

SMALL INCREASED INCOMES MEAN LARGE RETURNS IN HOME IMPROVEMENTS

Statistics compiled by the Bureau of Home Economics show that there was a gain of 10 percent in farm income in 1935. How did this increased income affect the surroundings of the farm family?

During the depression many homes had been neglected because the money was needed for necessities, such as food and clothing. With the increased farm income the farm women turned their attention to the homes with very excellent results.

A county-wide "Better Housing Campaign" was put on in each of the 45 Virginia counties employing a home demonstration agent. Sanitation, house, and furnishings repair, improved storage spaces, and equipment for saving labor were featured, the work was done through the home demonstration clubs, and through information carried by club members to others in the community not attending the clubs. The kitchen as a home workshop received much attention. Improvements were made in 4,034 kitchens: working heights were adjusted to save the worker's back, and kitchen equipment rearranged to save steps and time. As a means of saving time and energy, 3952 storage spaces were built or improved to provide a place for everything, and to save the endless searching that comes with inadequate storage space. In 409 homes kitchen sinks were installed and 329 families put in running water. In Albemarle county alone 111 water systems were installed. Home demonstration club women bought 6,313 pieces of labor saving equipment which added to the efficiency of the farm kitchen. Although not especially stressed by the better housing campaign, many other major improvements were made, such as installing electricity, electric appliances, refrigerators, better heating systems and new cook stoves.

As a result of the house and furnishings repair campaign, 9,172 living rooms, dining rooms, bedrooms, and halls were improved. The walls of 3,919 rooms were painted or papered, the woodwork painted, and floors refinished. Farm families improved or repaired, furnished and made more livable, 2,396 porches. Many of the homes in Virginia had lovely old pieces of furniture in a bad state of repair. Last year 4,331 pieces were repaired, refinished, and given a seat of honor among the other cherished pieces of furniture. More than 2,370 chairs and stools which had ceased to be useful were gathered up from basement and attic, repaired, refinished and new cane, splint or fiber seats put in them.

In the sanitation campaign, Campbell county was one of the most successful. In this county 340 families installed sanitary toilets and 100 other families followed recommended methods for cleaning and keeping the outdoor toilet sanitary. Labor for this campaign was given through a P. W. A. project fund and the amount saved to those installing toilets was $34,200. Approximately 1,435 outdoor sanitary toilets were built and 307 bathrooms were put in by the women enrolled in the thirteen county sanitation campaigns in Virginia. In Amherst county 157 toilets were built. In Carroll county one club of 37 members had 37 sanitary toilets built: not being satisfied with that, they appointed a committee to visit other communities. They got results, 106 toilets were built. In Henry county, 131 sanitary toilets were built or remodeled.

Screening played an important part in the sanitation campaign. The slogan, "Get Ahead of Mrs. Fly before She Gets Ahead of You" urged the campaigners on. About 2,940 homes were screened. Henrico county built 66 and Campbell county 24 screened living and work porches. Augusta county women screened 1,214 windows and 380 doors. The screened back porch activity made women conscious of their back yards and, as a result, 1,583 yards were cleaned; outhouses were repaired, moved closer together and screened from view through the use of vines, trees, shrubbery, and hedges.

Henrico and Louisa counties did very good work in improving porches and back door yards. In Henrico county 428 families made flower beds and borders and planted 878 shrubs and trees. Over 100 outbuildings were repaired and painted, creating a well-kept appearance around these farm premises. The women of Augusta county built 58 new yard fences and repaired 134 old ones.

No more sitting indoors under an umbrella for 310 families in four different counties who repaired leaky roofs as a result of the house repair campaign. Guttering was repaired; the risk of fires was lessened through the inspection and repair of chimneys; porch floor, railings and steps were repaired; the house foundation was put in better condition; and then the home had its face lifted with a good paint job.

Last year was the first in a long-time program in better housing as outlined by the extension service. The results were gratifying. No doubt the women who spent the slight increase of income in improving their homes feel amply repaid. Each of the counties in which there is a home agent is featuring another Better Housing Campaign this year and it is expected that there will be a decided gain over the improvements of last year.

A California laboratory makes perfume extracts from fresh fruits, and even from mushrooms.

Keeping the hands clean probably helps more to promote health and to prevent the spreading of diseases than do all other types of personal cleanliness combined.

FARM MANAGEMENT **AGRONOMY** SOILS CROPS

Use Better Seed—It Means Larger Yields, Better Quality Crops, and More Profits

SEED SELECTION PAYS DIVIDENDS

Efficient crop production is still in order, despite the effort to reduce acreage and total output of many of our more important crops. The administration's program is not to penalize efficiency, but rather to reward it by readjustment of the farming program.

Of the many problems which must be considered in efficient and economical production, one is especially timely at this season. For this reason, a brief discussion of improving small grains by means of seed selection is timely.

The first thing to be considered in choosing a variety of small grain is adaptability. The variety chosen should be well adapted to the soils and climatic conditions of your particular locality. The experiment station is in position to give this information for all sections of the state. If your present variety is not suited to the conditions of your locality, it is best to purchase new seed of an adapted variety before starting seed improvement.

However, if the present variety is satisfactory, it is worth considerable effort to maintain its purity and improve its yielding ability. There are many grain fields which give every indication for a bumper crop, but which, from a seed standpoint, are worthless because of varietal mixture, noxious weeds and mixtures of other crops. Many fields of smooth wheat are full of bearded heads, rye, onion, and cockle. This illustrates what happens when no care is given to the selection of seed.

The best method of preventing this condition and, at the same time improve the yielding ability of grains, is by plant or head selection. The selection can be made from the standing field, or from the bundles after harvest. The important thing is to select the seed and not depend on the thresher-run for the seed supply.

In selecting the heads there are several things to look for:

1. Select heads which are true to type for the particular variety. This is the way to keep the variety pure.
2. Select heads which are well matured, heavy and compact. Avoid long, loose, light heads; this condition often denotes a low yield strain within the variety.
3. Select clean, disease-free heads. Be especially careful not to get any heads which appear to be diseased. Our worst diseases are seed-borne, and their elimination will more than justify selection, regardless of the other desirable features.

Heads which are otherwise damaged, whether it be insect injury or weather injury, should also be avoided, since these heads are likely to have low vitality. A heavy pair of shears will be found very handy for clipping the heads while selecting.

After the heads have been selected in this manner, they should be threshed out by hand and stored under dry, well ventilated conditions until time for putting in the seed plot. A bushel of heads selected in this manner will be enough seed for approximately one-half acre.

The seed plot is for the purpose of multiplying the selected seed and furnishing sufficient seed for the regular fields the following years.

Locate the seed plot on fertile, well drained land, and prepare a good seed bed before planting. Liberal fertilization of this plot is highly recommended for maximum results, since it is from this that next year's seed should come.

Once the seed plot is established, the head selections should be made from it rather than from the general fields. In threshing the seed plot, every effort should be made to keep down mixture and contamination. Clean the machine thoroughly before threshing is started. The first ten bushels should not be used for seed if it can be avoided.

This method of improving the small grains is not complicated, does not require a great deal of time, and will give paying results on practically every farm in the state. Many of our best seed growers follow this method and find it profitable.

If you feel that you cannot make this selection and are going to use your own grain for seed, there is another method which will help a lot; that is to set aside an area in the best part of the field for seed purposes. Go through this area and carefully rogue out all mixtures and noxious weeds. Before threshing this area, follow the same precautions for preventing mixture and contamination mentioned above.

There is no phase of crop production which pays larger dividends, or which is more generally neglected, than seed selection. Now is a good time to start on the high road to better seed and larger returns for your efforts.

POULTRY

OW TO RAISE VIGOROUS, LIVABLE PULLETS

If your pullets have good constitutions they may be able to write your declaration of economic indepedence. Remember that the production of eggs is not everything, but that health and ability to live are the other 90 percent. It is not the chickens in your life that really count, but rather the life in our chickens.

There are ten poultry raisers who can get high egg production of a flock of healthy hens to every one that can raise healthy, rugged pullets, regardless of how good the stock may be at the beginning. As a matter of fact, there are more poultrymen that fail because of their inability to raise rugged, disease-free pullets than from all other causes put together.

All pullets of the heavy American breeds develop slower sexually than the lighter breeds, such as the Leghorn. Steady, even growth, alone with proper development, is the prime object to be sought when growing pullets. Proper feed, and a whole lot of it, is absolutely necessary for proper development. Pullets will not lay eggs until sexually mature, but before developing sexually they should be matured physically.

Improper feed always results in underdevelopment, slow physical maturity, stunted birds that are incapable of fall and winter egg production.

The young cockerels should be separated from the pullets. This separating should be done as soon as the birds can be removed from the heat of the brooder stove, or as soon as the cockerels can be sold as broilers or fryers.

At this period the feed hoppers should be enlarged and increased in number in order to avoid crowding among the pullets that are left in the range and brooder houses.

No pullet should ever be crowded. Generally from fifty to seventy-five pullets can be safely housed together after the brooder stove is removed from the house and the roosts set up. At this time the range shelter should be brought into use. These open shelters will be found very useful, as well as practical. If, by chance, when you shift your pullets, it happens to be cold, or winds are blowing; the sides of the shelters may be covered over temporarily with bags or roofing paper, all but the southern exposure, which should be left open. These shelters should be provided with wooden floors. This will make it possible to keep the houses more sanitary, and to protect the birds from animals which might dig under the sills of the house.

At first it may be necessary to place some of the birds in the house each night until they get used to the new roosting quarters, but this trouble is very worth while, both because the pullets are safer and because allowing them to form the habit of going to roost for a night on the ground around the shelters is an invitation to accumulating filth and consequent disease which generally results in a high mortality.

There are quite a number of different types of shelters in use and it seems hardly worth while to take the time here to describe one of them. You can obtain a plan or drawing of the V. P. I. shelter by writing to the V. P. I. Poultry Department, Blacksburg, Virginia. There is no charge for these plans.

With a few properly constructed range shelters, spaced about 100 feet apart on a good green range, better pullets will be raised than in the tight-walled brooder house where little air can reach the birds. This statement will be verified by most any poultry raiser who has ever been lucky enough to use such a shelter for a single season. The circulation of air under one of these shelters is far superior to a closed house. Furthermore, there is usually much more roosting space available and, with a sanitary flooring, the combination is very hard to beat. It will generally be found best to provide twice as many range shelters as you have brooder houses on the farm so that at least half of the birds can be taken out of the brooder houses and reared in the shelters.

Don't forget to place the shelters quite a distance apart, about 100 to 150 feet apart. You will say, "What, walk all that distance for a few pullets?" All right, which would you rather do, spend your time walking a little farther or digging holes to bury dead pullets throughout the laying season? You can't dodge the hard facts. Overcrowding and overuse of the land have made the rearing of healthy pullets and the attainment of low mortality an impossibility on many farms in Virginia. Many poultrymen would be better off if they would half raise as many pullets as they do, and raise these pullets right. Perhaps here is where the sale of sexed chicks will create a new danger, as a person who purchases all pullet chicks is bound to have more chicks at the age of putting them out on the range than he would have had if he had purchased a mixed flock of chicks.

During the growing season the pullets that are placed in the range shelters should be moved in their shelters once a month, say about fifty feet at a time; especially if the shelters only have wire bottoms. The idea is to move the shelters far enough so that the steady accumulation of manure, and of diseases and parasites, which is almost sure to occur under the shelter, will be stopped at once. After moving the shelters, the filth should always be carried off of the range. The shelters should be located between trees, as good shade on the range is a great advantage. This shelter can be furnished by using fruit trees, bushes, corn, sunflowers, or other quick growing crops that will give shade cheaply and quickly.

A good plan is to plow eight or ten furrows the entire length of the range, between each two rows of range shelters or brooder houses.

Plenty of clean, fresh water should also be handy to the birds at all times, as the growing pullets need much water during their growing period.

One large range hopper should always be furnished the pullets for each two range shelters and a brooder house. Generally count on about two hundred pullets per acre of range, after four months of age.

As the pullets mature, the requirements for protein should decrease. Too much protein in a pullet's ration throughout the spring tends to cause premature egg production. When the pullets are about twelve weeks old reduce the amount of protein in the ration. Hold up on the milk supply. Feed about equal parts of grain and mash. Supply mineral in the form of oyster shell or ground limestone, and keep good hard grit before the birds all the time. Green pasture is necessary for maximum growth and health, as it helps to supply the necessary vitamins.

As you care for your 1936 pullets, remember the old saying that "a chain is no stronger than its weakest link." More attention must be given to the raising of our young pullets intended for layers, as the annual percentage of mortality in our farm flocks is on the increase. We want to do everything we can to cut down this percentage in the future.

POULTRY MEETINGS

The sixth annual summer meeting of the Northeastern Poultry Producers' Council will be held August 26 and 27 at the University of Maine, Orono, Maine. This associations' territory embraces 13 northeastern states from Maine to Virginia and poultrymen from all these states, as well as from other sections of the United States, are expected to attend the meeting. The program will stress problems of special interest to poultrymen, including marketing, legislation affecting the poultry industry, breed improvement, feeding and nutrition, disease control and poultry shows.

The Poultry Science Association of the United States will have its annual meeting August 4-7 at the Virginia Polytechnic Institute, Blacksburg. About 250 poultry scientists from all sections of the country will attend this meeting. Copies of the program and details as to accommodations, etc. will be made public later.

SUMMER MEETINGS AT V. P. I.

Practically every person in Virginia concerned with any line of agricultural endeavor will be interested in one or more of the meetings for agricultural folks to be held at V. P. I. this summer. Dates for the meetings listed below have been definitely settled. Farmers and farm women should note particularly the dates for the joint meeting of the State Farmers' Institute, Institute of Rural Affairs, and Virginia Federation of Home Demonstration Clubs. Plans are now in the making for the biggest and best sessions of these three organizations ever held. The auditorium in the new administration building, seating 3,000 people, will be used for the joint sessions of the three and there will be room for everybody. The schedule of agricultural meetings for the summer so far arranged is:

Annual Conference of the Future Farmers of Virginia and Rally of Agricultural High School Students	June 15-18
Out-of-School Youth Training Conference	June 22-July 4
4-H All Star Club Members	July 17-20
4-H Boys' and Girls' State Short Course	July 20-25
Annual Conference of Teachers of Agriculture	July 20-23
Rural Ministers' Short Course	July 20-29
State Farmers' Institute and Institute of Rural Affairs	July 28-31
Virginia Federation of Home Demonstration Clubs	July 28-31
Poultry Science Association	August 4-7

FARM AGENT FOR FLOYD

At a recent meeting the board of supervisors of Floyd county made an appropriation for the employment of a farm demonstration agent beginning May 1. W. E. Willard, of Rural Retreat, and graduate of V.P.I. in animal husbandry, class of 1933, has been appointed to the position. Since his graduation Willard has been engaged in agricultural work and has made an excellent record. He has served as assistant agent in Chesterfield, Isle of Wight and Surry counties.

COOPERATION IN VIRGINIA

Electric Co-ops

The Electric Cooperatives Act goes into effect June 19, 1936, ninety days from the date it was signed by Governor Peery. The enactment of this law marks a big step forward in rural electrification in Virginia where less than 10 percent of the farm homes enjoy the benefits of electric power.

This new law provides the machinery through which interested groups can secure electric power on a cooperative non-profit cost basis. Such groups can incorporate a cooperative association under this law with the powers of a public utility company to build electric power lines and generate and distribute electric power to the members. Usually, however, they will buy their current at wholesale from the established power companies.

It requires about $1,000 per mile to build rural power lines. Not many farmers today can pay cash for their share of the cost of building such power lines and, at the same time, pay the several hundred dollars cost of wiring their farms for electricity and purchase the necessary electric appliances to get the most benefit from electricity. Fortunately the Federal government has established the rural electrification administration which will loan economically sound electric cooperatives the necessary funds with which to establish their power lines.

Interested groups of farmers who wish to take advantage of the new opportunities for obtaining electric power should get in touch with their county agent regarding securing the assistance of the V. P. I. extension division in planning a survey to determine the prospective number of customers along the proposed power line and the securing of the necessary financial aid from REA.

Virginia Sweet Potato Association

The sweet potato growers in the Petersburg area incorporated the Virginia Sweet Potato Association early in April for the cooperative curing and selling of sweet potatoes.

The plan of operation calls for the association making contracts covering the operation of curing houses in Disputanta and Petersburg, and possibly Hopewell. The growers using each of these houses will all have marketing agreements directly with the association, regardless of which house they patronize. The association will have charge of each house and the cost of operating each will be charged against the potatoes handled through the house.

The association has engaged as manager a man who has had considerable experience in developing new sales outlets for sweet potatoes in the coal mining areas of West Virginia and Pennsylvania, also in middle western markets. The association plans to grade the potatoes carefully and establish its own brand which, as the result of superior quality, will develop a reputation that will make sales easier at improved prices.

The association will also act as the cooperative selling agency for any of the other cooperative sweet potato curing associations in the state that may care to join. The larger the volume of sweet potatoes handled by the association, the more economically the association can operate and the more effectively it can develop new market outlets.

Accurate Accounting Important

All too many farmers think that if a cooperative pays the members a fair price for the products they deliver to it and closes the year with a small balance in the bank it has served its purpose. They want the association to operate at the lowest possible cost and do not see the need for incurring the expense of employing a bookkeeper to keep accurate record of the business transactions of the association. The trouble is that these people have no conception of the work involved in keeping proper and accurate account of their money as it is handled by the cooperative.

To the average person, there is nothing very complicated about adding up the number of bushels of tomatoes each member delivers to a cooperative cannery and, after adding up the money received from the sales, subtract the expenses and pay the balance to the members for their tomatoes. Unfortunately, this is not as simple as it seems. There are customary cash discounts to the customers, allowances for leaks and swells, allowances for labels on some shipments and not on others, brokerage to pay on some shipments and not on others, and other complications that mean work for the bookkeeper. Some of the members work in the cannery and want the money for their work credited against their fertilizer bill, others want to pay cash for their fertilizer and secure the patronage dividend at once. Some members haul their own tomatoes, others want the association to pay the truckman and deduct it from their tomato money. All these things increase greatly the work of the bookkeeper for even a small cooperative cannery. It takes considerable time and knowledge of bookkeeping to handle properly all these entries in the book. If the entries are not properly made, there will probably be some serious mistakes in the settlements with the various members. There are also numerous reports required from cooperative canneries, and other cooperative organizations from the various governmental agencies, and some of these reports determine whether or not the cooperatives will secure exemption from Federal income taxes as a non-profit farmers' cooperative.

It is, therefore, for the best interest of every member of a cooperative association that the directors should employ a competent bookkeeper to keep the books of the association and prepare the necessary reports. The members should also demand that the directors have an annual audit made by an outside auditor to make sure that the books have been accurately kept during the year and the settlement made with the members correctly.

Co-op Sales Agency

The middle of April the cooperative canneries in Montgomery county had a visit from Mr. Barr, manager of the Land of the Sky Mutual Association. The L. S. M. A. is a cooperative service and sales agency for cooperative canneries. It was started in 1934 as an affiliate of the T. V. associated cooperatives to serve the newly established cooperative canneries in western North Carolina.

L. S. M. A. serves as the purchasing agency for the cooperative canneries that are its members. With the large volume of cans and cases it buys, it is able to obtain substantial discounts, which savings are passed on to the members. It has developed two brands of its own which are registered in the United States Patent Office. It buys the labels bearing these brands and supplies them to the member canneries at low cost.

During the canning season, Mr. Barr, who has had over 25 years' experience in the canning business, visits the plants of the member canneries and helps them to improve their operating efficiency, also improve the quality of their pack. The L. S. M. A. is strong for quality and for assisting the member canneries in putting up choice and fancy canned goods.

In making sales it employs selected brokers in the important consuming centers of the south and east. With a wide variety of canned products, it has a sufficient line to interest brokers in giving the cooperative whole-hearted sales support. Mr. Barr visits the trade with the brokers and helps to develop a demand for quality co-op products at premium prices. Through this sales set-up the L. S. M. A. returns attractive prices to the member canneries. Membership in L. S. M. A. is open to cooperative canneries in Virginia.

Uncle Ab says we are eventually captured by the things we pursue the hardest.

The Virginia Agricultural Situation

WHAT TO PRODUCE—HOW MUCH TO PRODUCE—WHEN TO SELL.

Foresight springs from intimate knowledge of the past

Prices on Virginia farms, as reported by the Virginia and the United States Departments of Agriculture, show 5 increases and no decreases during the month. During the year the largest increase was in potatoes, the greatest drop was in apples.

	VIRGINIA PRICE				RELATIVE PRICE Compared with av. of 100 during 1910-1914		
	April 15 1936 (now)	Mar. 15 1936 (mo. ago)	April 15 1935 (yr. ago)	Average 5 years 1910 to 1914	April (now)	Mar. (mo. ago)	April (yr. ago)
Farmers' purchases (U. S. retail)					122	122	127
LIVESTOCK:							
Hogs, per 100 pounds	$9.30	$9.10	$7.85	$7.38	126	123	106
Beef cattle, per 100 pounds	6.20	6.00	6.10	5.21	119	115	117
Lambs, per 100 pounds	8.60	8.00	7.90	6.19	139	129	128
LIVESTOCK PRODUCTS:							
Farm butter, per pound	.22	.22	.24	.24	92	92	100
Butterfat, per pound	.29	.30	.32				
Wool, per pound	.27	.27	.23	.22	123	123	105
Eggs, per dozen	.17	.17	.19	.20	85	85	95
Chickens, per pound	.18	.18	.17	.14	128	128	121
CROPS:							
Wheat, per bushel	.99	.99	.99	1.00	99	99	99
Cotton, per pound	.115	.110	.117	.115	100	96	102
Potatoes, per bushel	.90	.85	.70	.84	107	101	83
Sweet potatoes, per bushel	.85	.85	.85	.77	110	110	110
Apples, per bushel	.90	.90	1.10	.62	145	145	177

VIRGINIA AGRICULTURAL AND MECHANICAL COLLEGE AND POLYTECHNIC INSTITUTE AND U. S. DEPARTMENT OF AGRICULTURE, Co-operating
EXTENSION DIVISION, JNO. R. HUTCHESON, DIRECTOR, BLACKSBURG, VIRGINIA

Extension Division News

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INFLUENCE OF SCIENCE AND MACHINERY ON AGRICULTURE

Adapted from Remarks by Henry A. Wallace, Secretary of Agriculture

On occasions such as this we naturally contrast the present with the past. In putting 1936 alongside 1836, some people think the advantage would lie with 1836, though they do not scorn the material comforts of 1936. Others, while rejoicing in our material progress since 1836, refuse to admit that our social and economic problems have changed since then, or can possibly require solutions that were not known and approved in 1836. Their loyalty to the 19th Century is so complete that I fear they are in for some very uncomfortable moments in the remainder of the 20th Century.

The source of their discomfort will be found in that one group of forces which more than any other is responsible for the way in which 1936 differs from 1836. I mean the forces of technology, of science and the machine. They have been changing our environment and our social and economic problems at an increasing rate of speed; there is every reason to expect the change to continue at still higher rates of speed. If our social and economic machinery had changed at equivalent rates of speed during the past century, our social and economic problems would be less acute today. But because the attitudes and prejudices of the 19th Century still dominate the minds of many, we still have to chase a 20th Century airplane in a 19th Century horse and buggy.

The forces of technology have been particularly active in agriculture. The difficulty is that they seem to have created at least as many problems as they have solved. That is why we have to concern ourselves with the impact of technology on agriculture.

Forces of Technology Are Impersonal

If you believe that concentration of land ownership is a threat to our most cherished American traditions; if you are concerned about the extent of tenancy and absentee landlordism in our best farming regions; or if the intensive commercialization of American agriculture seems to you at best a mixed blessing, you must of necessity look critically at the compulsion behind these trends. Much of that compulsion comes from the impersonal forces of technology—new inventions, new machines, new crop varieties, new productive and distributive processes.

To a large extent the kind of agriculture we wish to have in the United States of tomorrow depends upon the forces of technology, and how we propose to let them operate. It is not merely a question of how much corn, wheat, and cotton we can produce or ought to produce, or a question of where these great staples can most profitably be produced; it is even more a question of how to preserve and enlarge the economic opportunities of the great mass of farmers.

The droughts of 1930, 1934, and of 1936 have concealed the operation of these technological forces, but certainly have not stopped them. It is safe to assume that they will be in full swing during the next five or ten years, as they were in the decades of the Twenties. Once again they may bring us burdensome surpluses, strange as that thought seems today in the wake of the worst drought in our history; and again they will shove us closer and closer to the day when we must either control them or be controlled by them.

Ask the average city person about the contributions of science and the machine during the past century and he will at once mention the radio and the airplane, the automobile and the telephone, perhaps mass production in industry. He will usually be unaware of the impact of technology upon agriculture, though his very existence in the city has depended upon it.

The fact is that agriculture has kept pace with industry to an astonishing degree. Between 1910 and 1930, output per worker increased 39 percent in manufacturing and 41 percent in agriculture. In the five years between 1922 and 1926, one of the most remarkable periods in agricultural history, agricultural production increased 27 percent, while crop acreage remained stationary and the amount of labor in agriculture actually decreased.

Efficiency Releases Land, Displaces Farmers

For a long-range contrast, put 1936 against 1787, the year the Constitution was framed. Then it took 19 persons living on farms to produce enough for themselves and for one person in town. Today 19 persons on farms can produce enough for themselves and for 66 living in town.

This is a shift of greater magnitude than took place in the 10,000 years previous to 1787. We are not yet fully aware of its meaning. Our minds and bodies, traditions and customs have been shaped by thousands of years of the most difficult hand-to-hand conflict with the forces of nature. It is a heart-breaking job to plow an acre of wheat with primitive tools. It is a back-breaking job to harvest the wheat of that acre, and it is a long and disagreeable job to flail out a bushel of wheat from the straw. Each grain of wheat represented a drop of sweat. The man who produced it had come into the most intimate physical contact with the soil. In 1787 nine out of ten people in the United States knew exactly what it meant to sweat in the fields and to watch for the rain which was long in coming. Even the people in town were close to the fields. Most of them had their gardens; nearly all of them kept a cow and a pig or two. With few roads and uncertain transportation, agriculture was in truth a local matter.

During the first 100 years of our national existence, agriculture dominated our national life. Our most dramatic activity was occupying new lands. The great contribution of finance and industry was to build the roads, the railroads, and the machinery necessary to enable farmers to occupy new lands. As a result of these forces of change, the efficiency of the average farmer during our first 100 years increased probably more than five-fold. During the past 50 years his efficiency has about doubled. And it is possible again to double the efficiency of the average farmer in the United States, probably in much less than 50 years, but this cannot take place as long as we have urban unemployment of such a nature as to force unemployed persons unfamiliar with farming back on the land.

Man Aided by Science and Machine

In a thousand ways science and the machine conspire to help us produce more per hour of man-labor. A crop rotation which enriches the soil means more corn per acre; a new corn variety which outyields existing ones by 5 or 10 bushels, or which cuts down losses from disease, insects, or bad weather; a machine which plows, cultivates, or harvests more efficiently; a size of field and of farm which is best adapted to the new machines and practices—things of this sort can easily add up to smaller land and labor requirements, probably larger but fewer farms, greater demand for outside capital, perhaps more absentee landlordism, more tenancy, and more production for market.

Efficiencies of this sort made it possible between the end of the World War and the beginning of the depression to increase milk production 35 to 40 percent with only a 15 percent increase in dairy cow numbers; and increase pork and lard production 18 percent with 9 percent fewer hogs.

We can do still better. In the not too distant future I believe we can have a strain of hogs whose inheritance can be so controlled that their offspring will average a hundred pounds of gain from 330 pounds of feed instead of the present 400.

If the Corn Belt were being run by a great corporation, say the AT & T, within 20 years it probably would be producing the present supply of pork and lard with half as much man-labor as at present, with 35 million instead of the present 50 million acres in corn, and with probably half as many farms and half as many people living on farms. That is the possibility of efficiency and commercialization pressed to the extreme. May the day of impersonal corporate dominance of a completely efficient and commercialized agriculture never come!

Yes, the gains of science and the machine are obvious. But there is a question as to the distribution of these gains, and there is another question as to the social cost of technological progress.

Workers' Living Standards Higher

Both in agriculture and in industry some of the gain in efficiency has of course accrued to the worker in the form of higher living standards. In England in the Middle Ages it took the value of several days of city labor to buy a bushel of wheat. By 1840 in the United States, it required six hours of city labor on the average to buy a bushel of wheat, but by 1930 the ratio had been reduced to 1.3 hours. In this country during the past 100 years the increase in efficiency of both farm and city labor has been astounding. Now it's time to begin thinking about a just distribution of those gains.

More of the gains of agricultural tech-

nology have accrued to industry and to the consumer than to the farmer. Within agriculture, except in times of severe depression, more of the gains have accrued to the larger and wealthier commercial farmer than to the man with a relatively small farm on relatively poor land. As a rule the wealthier farmers are in a better position to utilize the most up-to-date information from the agricultural colleges and the Department of Agriculture. As agricultural science progresses, the opportunities for the profitable employment of capital in agriculture increase. The result is to favor the land owner as against the tenant, the man with capital as against the man without capital.

But now a new tendency is operating. Now we see the impact of science and the machine favoring the application of the corporate form of organization to those areas where the wealthier commercial farmers have hitherto been supreme.

The impact of technology, if uncontrolled, would in time probably concentrate commercial agriculture in large mechanized units, financed by capital from the cities. The independent family-sized farm would have the severest sort of competition, perhaps fatal competition. It might have no choice but to withdraw from commercial agriculture and become relatively self-sufficient—as the lower income half of our farms now are.

Technology May Create Peasant Class

Thus the same technology which can give us such highly efficient commercial farms, can at the same time give us a peasantry. As I understand it, a peasant is essentially one who works long hours on his own land more or less inefficiently, producing most of what he consumes, selling little and buying little. Under peasantry the farmer might sell 10 percent of what he produces and buy 10 percent of what he consumes; at the other end of the agricultural scale, the highly commercialized, mechanized end, the men or the corporation owning the land might sell 95 percent of what they produced and buy from others 95 percent of what they consumed.

The trend away from the family-sized farm, owned by the man who operates it, has gone far enough to demand attention and action. Tenancy has steadily increased in the most favored farming areas, with Iowa well up in the list, followed closely by Nebraska, South Dakota, Illinois, and Kansas. In these States between 40 and 50 percent of the farms are occupied by tenants. In Iowa 10 percent of the land is owned by corporations. In Montana 14 percent of the land is so owned, and of the 42 percent owned by private individuals, a fourth is owned by people living outside the state.

Under the old Triple-A programs, we had an opportunity to see to what extent absentee landlordism and multiple ownership had developed. We discovered 55 land-owners each of whom owned 150 or more farms. Most of these big owners were insurance companies or banks, as you would expect. The largest owner, an eastern insurance company, owns more than 4,300 farms. How many more than 4,300 we do not know, for we have record only of those farms on which there were Triple-A contracts.

In all, these 55 multiple farm owners in 1934 operated at least 1,045 tobacco farms, nearly 11,000 cotton farms, and about 40,000 cornhog farms. How many dairy, truck, or general farms they also operate, we have no way of knowing.

Much of the transfer of farm ownership to corporations during the depression was due to high debts and low prices. When, as in 1932, prices for some farm products were lower than they had been since the time of Queen Elizabeth, farmers whose farms were mortgaged were unable to avoid foreclosure. Similarly, those farmers who had been the victims of drought, flood, or other natural disaster have found it difficult or impossible to hold on to their property. We do not know what will be the full or final effects of the present drought. But we *do* know that government intervention has helped and is now helping to protect farmers in the drought-stricken areas from its full effects. Without this help the family-sized farm is bound to lose further ground.

Corporations, in Advantageous Position

A corporation farm cannot withdraw into self-sufficiency. It must use every new machine, every scientific advance that promises to lower production costs and increase its return on its property. Investing a thousand dollars or more in a new machine may be out of the question for many individual farmers, but a corporation with thousands of acres to operate has both the economic incentive and the capital to buy the machine. Concentrated, large-scale ownership of farm land inevitably means the prompt and full application of science and the machine to agriculture. That in turn means lower production costs, probably increased production, and even stiffer competition for the family-sized farm in what is already the most competitive of industries.

The average farmer might dismiss this increased competition as an idle threat if he could see ahead of him a constantly enlarging market for his products. But with a stationary population possible 10 or 15 years hence, and with the demand for food largely fixed by the size of the human stomach, the average farmer cannot look forward to endless expansion of his market. He sees the gains possible through science and the machine, but he also counts losses. He wants to increase his efficiency, but he doesn't want to see the family-sized farm shoved off the map as a result.

Our dilemma therefore, seems to be as follows: Shall American agriculture let an uncontrolled technology wipe out the independent family-sized farm, or shall American agriculture turn its back on technology, in order to preserve the family-sized farm?

Most people will shrink from either horn of the dilemma. Most of us want both the family-sized farm and all the blessings of science and the machine. Most of us, therefore, will seek a middle course. There are some, though, who would sabotage science and the machine as the wisest move.

A month or so ago I was talking about this with Chester Davis, then just returned from Europe. Mr. Davis told me that in Hungary he had found an excellent illustration of this very thing. For some years now many Hungarian farmers have been landless, or with inadequate acreages. As a result they have had to have extra work in order to live. The coming of large-scale farm machinery, however, threatened their livelihood. The government, fearing agrarian discontent and political trouble, adopted the definite policy of discouraging the use of binders and mowers in harvesting grain. The policy is rather easily enforced, since the Hungarian Government operates a grain monopoly, and refuses to buy the grain of those farmers who use the forbidden machinery. In consequence, visitors to Hungary in the year 1936 will find farmers still harvesting their grain with scythe and cradle.

Industrial Labor Forced into Factories

That is one way to avoid the impact of technology. It is much like the way in which English labor tried to meet the impact of technology on the textile industry more than a century ago. New machines, product of the industrial revolution, promised to destroy cottage industry, where a man's home was also his workshop. The machines required factories, but the labor of that day resented being herded into a factory. That was regimentation. And labor also feared for its bargaining power under the factory system, and for economic independence and security. So the breaking of machines and the burning of factories were labor's first answer to the industrial revolution. The industrial revolution, however, went on.

It is possible that American agriculture, as represented by the family-sized farm, is today in somewhat the same state that cottage industry was in England more than a century ago. It is possible that those American farmers without capital and without training to use the results of modern science may become even more bitter than the British handicraft workers of a hundred years ago.

The handicraft workers of a hundred years ago were crushed because they did not understand the nature of the forces they were combatting. The disadvantaged farmers of the United States today may face the same fate if they fail to understand the true cause of their trouble.

When superior efficiency is made available for the benefit of all mankind, it is surely wiser to direct such efficiency than to attempt to stop it. But the problem is to make superior efficiency the servant of the general welfare and not merely the weapon of a favored group. It is unfortunate that so many human beings should feel bitter toward one another when the source of much of the difficulty is the superior competing power of those who have the capital to use the results of science and invention. The tension created by the uneven and to some extent accidental impact of this situation upon different groups causes millions of people, through no apparent fault of their own, to buck up against problems which as individuals they cannot possibly solve. The consequences—economic distress and social unrest—affect all society. If the social organism is to survive it is obvious that tensions of this sort must be relieved by social mechanisms which operate more definitely on behalf of the general welfare.

It is conceivable that American agriculture might go through the same painful evolution that English cottage industry went through a century ago, but it does not seem to me necessary. Concentration of land ownership, tenancy, and all the other undesirable consequences of technology of course can continue undisturbed, but only if we the people are content to have it that way.

Forces of Technology May Be Guided

We can't stop the forces of technology, but we can take steps to guide them into more socially desirable channels. Perhaps the first step will be a universal appreciation that these forces are too powerful to be stopped by speeches, by resolutions, or even by legal decisions. In this country, as in England a century ago, the impact of technology will be stopped by none of these things—not even by State lines.

The next step will be to see what can be done to adapt our science and our machinery to the kind of agriculture we wish to see. If we are really serious about wishing to preserve the independent family-sized farm and to make it a profitable economic unit, we will begin considering more of our machinery needs from that viewpoint rather than from the viewpoint of the large-scale corporation farm. And perhaps we will consider more closely the enormous potentialities of electricity on the farm, a field in which the Rural Electrification Administration has been doing some excellent pioneer work. With only one farm in ten having electric power, we still have ample room for progress here.

But perhaps most important of all, there is that basic question of our attitude toward government. Is individual initiative the

(Continued on page 4)

DAIRY EXTENSION NEWS

THROUGH THE WINTER WITH A SHORT DAIRY FEED SUPPLY

Many Virginia dairymen are facing the winter with subnormal feed supplies for their herds. In some sections of the state the forage crop supplies such as hay, silage, fodder, and straw are from 40 to 50 percent below the normal supply needed to feed the herds through the winter. This situation has created many serious dairy management problems, especially since both hay prices and grain concentrate prices have increased from 20 to 35 percent since June, while fluid milk prices have remained relatively constant. This decrease in the margin between feed costs and fluid milk prices makes it extremely difficult for the dairyman to meet the labor costs, taxes, interest, cow and equipment replacement charges, electric and other power costs, and the necessary overhead costs, and have a reasonable profit on which to live according to the standards for his community.

Ordinarily the dairyman depends upon his roughages to supply the bulk of his milk producing rations, but on those farms where the roughage supply is limited and the milk price-feed price ratio is very narrow, due to rising feed prices, the problem of what to do to hold the herd intact until the spring pasture season arrives is difficult to solve. Each farm in itself presents its own particular problems and, as such, must necessarily receive specific attention.

Although only general suggestions can be made as to how one may meet the feed shortage, there is only one proper solution for the problem on the particular farm. As in any other emergency, the dairyman who has consistently kept production, feed consumption, and feed cost records on his individual cows is in decidedly better position to make adjustments than is the dairyman who keeps little or no business records on his cows. It is generally recognized that, when the cost of feeds and other production costs rise, while the market price for milk remains constant, the average production per cow in the herd must rise to carry the increased cost. In other words, on any farm where the feed costs represent 45 percent of the total costs of production, the dairyman should receive at least $2.22 for each dollars worth of feed fed to produce the milk in order to just break even for all the costs of producing the milk. Whether the dairyman will receive $2.22 for every dollars worth of feed fed, depends upon the rate of production of the individual cows, the cost of the feed, and the price received for the milk.

Since major adjustments must be made in the feeding of some herds, dairymen who know the average daily production of their individual cows are inclined to limit the rations of the lower producing cows, and to give the feed thus saved to the higher, more efficient producing cows in order to get a wider profit margin on the fed fed. Under present conditions, considerable saving can be effected in the grain phase of the ration by this adjustment, since grain is the most expensive element and the grain should not be fed to producing cows that cannot pay for it. This grain adjustment is relatively simple if the dairyman has a sufficient roughage supply to support the lower producing cows until they freshen and their rates of production are high enough to warrant grain feeding, or until the market price for milk rises, or the prices of grain come down to a point to assure the dairyman $2.22 for each dollars worth of feed fed.

Since June, grain prices have risen 35 percent in most cases. Many feed manufacturers have succeeded in keeping the market price of grain concentrates relatively low in view of the current grain market prices. This comparatively lower price per ton for some dairy grain concentrates is brought about in most cases by changing the concentrate mixture formula so that cheaper and usually less nutritious ingredients are used. This change in the concentrate mixture may not affect the crude protein analysis of the feed, but in many cases the *digestible protein* and the *total digestible nutrients* are greatly reduced so that the dairyman may be paying comparatively less per ton for his grain concentrates, but at the same time he may also receive comparatively less nutrient materials in the feed.

In this day when one receives just about what he pays for, a low price for a ton of dairy grain concentrates does not necessarily mean that the dairyman is buying an economical feed. It would be well for the dairyman, since he is likely to be compelled to buy considerable grain this winter, to buy his grain concentrates only according to their cost per pound of *digestible protein* and their cost per hundred pounds of *total-digestible-nutrients*. Each dairyman is entitled to know the guaranteed percentage of digestible protein and total-digestible-nutrients contained in any grain concentrate he buys. By dividing the percent of digestible protein into the price of one hundred pounds of the concentrate, also by dividing the percentage of total-digestible-nutrients into the price of one hundred pounds of the substance, the dairyman can determine for himself how much he is paying for the materials from which a cow produces her milk and sustains her body. With dairy concentrate mixtures at their present level, it will pay every dairyman to buy his concentrates only according to their guaranteed percentage nutrient content, and it may be found that some of the feeds sold at a higher price per ton may be the most economical to feed. A good rule to follow is to compare the feed analyses before you compare the prices.

Although some dairymen may be compelled to sell part of their herds because of feed shortage, nevertheless the judicious use of what roughage may be available may help to carry the herd through until pasture season next spring. Corn stover, straw and grass hays are low in nutrient material and are not regarded as good feeds for milking cows. On the other hand, if the corn stover and other cheap roughage materials are shredded and stored properly under a roof, they can be made to serve a good purpose. At present black strap molasses is one of the very cheapest feeds in the market and, according to the market outlook, molasses is likely to remain low in price. Black strap molasses mixed at the rate of approximately one quart per gallon of hot water and then sprinkled over the cut fodder or other roughage will make the roughage more palatable. An ordinary garden sprinkling can might be used for this purpose. This simple, inexpensive treatment will add nutrient to the roughage; also encourage the cows to eat more of the roughage.

On those farms where the roughage supplies are limited, it is likely to pay the farmer to shred his corn fodder, then either blow it in the barn and preserve it in a dry cut condition, or blow it into the silo and preserve it in a wet cut condition. In either case the fodder will prove more nutritious and valuable as a feed if it is taken from the field as soon as possible after it is cut and dried. The shredding of the fodder will induce the cattle to eat more of it; while putting the fodder into storage before the rains and sun have had an opportunity to leach out the soluble nutrient materials, and before the wind has had a chance to whip off the leaves; will provide a fair grade of forage for dry cows and young stock. If put into the silo, considerable water should be added to the shredded material to insure proper preservation. A hose should be turned in at the blower and another should be allowed to spray water directly on the material as it falls in the silo.

Additional nutrients will be added to the ensiled fodder, and its keeping qualities as well as its palatability will be increased, if 20 to 40 pounds of black strap molasses is added to each ton of fodder as it passes through the blower. The molasses should be mixed in an elevated tank with the amount of water that would ordinarily be added to a ton of dry fodder. Then by gravity the solution might be added to the shredded fodder as it passes through the blower. A valve on the hose or pipe delivering the solution at the blower will permit rather accurate regulation of the amount of solution added to the fodder. Although molasses will add to the feeding quality of fodder silage, good fodder-silage can be made without molasses if plenty of water is added to the fodder and if the material is thoroughly packed in the silo.

STORY ABOUT CHEESE

An institution in the state having surplus milk in summer could find no market for it except to send the skimmed cream into the nearest town to be made into butter. The price paid was a little over 30 cents; one hundred pounds of milk 4 percent fat brought approximately $1.25, less the delivery charge.

The owners became interested in making cheese for their own use out of this surplus milk. After a cheese making demonstration was given, they decided to make all surplus milk into cheese. The equipment was provided and a bright boy was instructed to make the cheese. One of the first cheeses he made was brought to Blacksburg, and after 30 days sold to a nearby merchant who pronounced it one of the best he had ever tasted. Other employees in the store expressed a similar opinion. The market price of 22 cents was paid for another cheese, made at the factory near Blacksburg, which they agreed was not as good as the one made locally.

One hundred pounds of milk 4 percent fat making 10.6 percent of cheese, sold as cheese at about $2.33, which was 85 percent more than if sold as cream. The entire transactions with the cheese were local.

Since there is a demand for cheese in this state, if a farmer has the raw material, labor and market for his cheese, he may profit by using them in making this product. The Extension Service at V. P. I. will provide personal instructions in a simple method, and if it is made in quantity a buyer can be secured who will pay the market price on delivery.

Anyone interested in making cheese in small or large quantities, may receive instructions for making and marketing this product by writing the V. P. I. Extension Division at Blacksburg.

The type of lighting used can change the entire effect of a room at night.

Uncle Ab says that the biggest men generally use the smallest words.

EXTENSION DIVISION NEWS

JULIAN A. BURRUSS.....President
JNO. R. HUTCHESON.....Director
E. 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

Miss Cymbel Taylor, State Clothing Specialist, resigned, effective August 31, from the position which she had held for the last six years. Miss Iva Byrd Johnson, a native of Spotsylvania county, has been secured to fill this vacancy and began work October 12. Miss Johnson has her B.S. degree from Fredericksburg State College and her masters degree from Columbia University. A rural background, training for and experience in teaching, and recent activity in the rural resettlement program makes Miss Johnson exceptionally well qualified for her work.

Miss Juanita Maupin has been appointed as assistant home demonstration agent in Amherst county, effective September 14. Miss Maupin has her masters degree from the University of Tennessee and has had several years experience as a teacher of home economics.

The spirit of the recent popular song, "Love Your Neighbor," really found expression August 19, at the Essex County picnic at Richmond Beach. Farmers, business men, Essex citizens, former inhabitants and their friends gathered at the Beach for their fifth annual county wide picnic. This picnic is sponsored by the farmers, home makers, and the extension agents of the county. It was a real day of fun for all, a day of recreation and entertainment. From the moment of arrival, through the swims, the ample lunch and that famous husband calling contest, everybody put aside troubles and had a genuinely good time.

There were approximately 1500 people present, the majority of whom displayed their ability to race, play tug of war, call hogs, husbands, or chickens, throw baseballs, drive nails and take part in the many other games. These were in charge of W. E. Hamilton who has directed recreational features for the last two years.

A touch of instruction was afforded the picnickers in the addresses given by Miss Janet Cameron, State food specialist, and Prof. T. B. Hutcheson, V. P. I. Miss Cameron spoke on "Human Conservation" and Mr. Hutcheson's topic was "You Can't Get Blood Out of a Turnip." After the addresses the rest of the afternoon was taken up with the games and recreational features. Prizes which were donated by the merchants and business houses of Tappahannock, people of the county and Richmond, were awarded the winners of each contest.

The star performance of the day's events was the tug of war contest which was terminated by a draw after a 67 minute struggle, a record breaking time. This contest was between Essex and King and Queen counties, eight men on a side.

The contests and winners in the fifth annual picnic at Richmond Beach were: nail driving for men, Haile Parker; nail driving for women, Mrs. H. W. Bradley; shoe race for boys, Edmund Haile; shoe race for girls, Mae Taylor; husband calling, Mrs. A. W. Tate; bag blowing, Charles Durham; balloon blowing (called off because balloons were imperfect, and some burst before they could be blown up); bag race for girls, Virginia Willis; bag race for married women, Mrs. Dollie Allen; bag race for boys, Temple Wacksmuth; cracker eating, Bernice Clark; backward race, Ben Willis. Judges for the contests were William Ellis and Emory L. Carlton.

Guessing the number of seeds in a watermelon proved to be a source of much amusement, guesses from 25 to 2000 were the number guessed. The correct number was 754 and the prize went to Louise Andrews whose guess was 753.

Fifty-seven Amelia county home demonstration club members and their friends enjoyed an annual pilgrimage to places of interested in and near Richmond recently. The Capitol, St. John's Church and Maymont were visited. On the return trip everyone stopped at Watkin's nursery to see shrubs suitable for base plantings and other yard beautification.

A well prepared program of instruction and recreation, a bountiful picnic supper spread under the trees of Brunswick Hall, these and many other interesting events mean the "annual picnic" to Brunswick county people. J. R. Hutcheson, director of extension service, made an able presentation of the conservation program. These picnics serve as an occasion for bringing together people from all over the county.

The first achievement day program of the year was the one in Highland county Saturday, September 19, at Monterey. Miss Maude Wallace attended this meeting and spoke to the group; and Miss Belle Burke was present to assist with the judging. Miss Wallace remarked especially on the progress made by this county as evidenced by the type of exhibits shown. Their achievements were many and varied in food presentation; in baskets and trays, and other forms of hand work; in the flower display; in high quality vegetable collections; in clothing work; in poultry and other lines. The question now is where can they hold the achievement day; they have outgrown the limited space of the court house.

Achievement day dates have been planned for every county which has had home demonstration work as much as a year, and all 4-H club and home demonstration workers will report their achievements to the interested people of the county sometime during October or early November. Following this the annual planning meeting will be held in each county when the program for the coming year will be mapped out.

INFLUENCE OF SCIENCE AND MACHINERY ON AGRICULTURE

(Continued from page 2)

only weapon necessary against the impact of technology on agriculture, or should farmers have the right, within limitations, to borrow the powers of government?

If we look at the matter in a commonsense way, forces which operate on a nation-wide and world wide scale, whether they are the result of the inventions of man, or of the failure of nations to adjust themselves to the facts of the post-war situation, or of unusual developments in nature—such forces are the proper concern of all National Governments worthy of the name.

I have talked chiefly about the first force, the impact of technology on agriculture, and have suggested that while future expansion of agricultural technology and invention was desirable and probably inevitable yet grave social problems were certain to be caused by the unequal impact of technology on different classes of our society.

Concerning the second of these forces, having to do especially with the failure of the United States to adjust herself to her post-war creditor position, I have written in the pamphlet "America Must Choose" and elsewhere. With regard to the third force, that which has to do with unusual developments of nature, there is no great difference of opinion.

Scientific Study of Farm Problems Advised

Everyone, I think, will agree that this drought, like those of 1934 and 1930, is interstate. The legalistic mind may think agriculture a local matter, but the weather doesn't, and neither can a responsible National Government.

No one can contemplate the plight of people in the dust bowl or the Northwest striving year after year against impossible weather without resolving that some constructive solution must be found. The government has poured millions of dollars into these regions in recent years for purposes of temporary relief. Millions of acres in these regions are under the plow and in years when rainfall is plentiful the crops are worth more than the land.

But should the Federal Government maintain thousands of people in such areas until it rains again? Or should the Government devise an actuarially sound insurance scheme for staple crops in such regions? Or should the Government zone the land as the State of Wisconsin has done and then gradually enable the people to shift while at the same time new people are not allowed to come in to plow land which never should be plowed?

There are many possible answers and no one of them is altogether sound for all regions. But the one thing we do know is that we need more fundamental scientific study and less alarmist talk. We need a continual study over the entire world of long-time trends in weather. We need to know more definitely the regions which should be left to grass and trees and which should never be plowed. We need to know the regions where the land can be plowed with safety but where special methods should be used and crop insurance schemes set up.

America's vast natural resources, her technological and inventive ingenuity, and her democratic institutions make her the hope of the world's future. Opportunities are spread before us which are available to no other people. On the one hand we can waste our soil and other natural resources, we can use our inventive power chiefly to create unemployment and we can prostitute our democratic institutions through hireling, destructive propagandist agencies. On the other hand we can conserve our soil and our natural resources, we can use our inventive power to increase jobs and the standard of living of all our people and we can make our democratic institutions truly virile with an understanding so well informed that hireling propaganidists will spend their money in vain. America is sound at heart and wishes to devote her inventive power, her natural resources, and her domestic institutions to give bounty and hope to all our people insofar as their ability permits.

"Hordes of gullies now remind us
We should build our land to stay;
And, departing, leave behind us
Fields that have not washed away.
When our boys assume the mortgage
On the land that's had our toil,
They'll not have to ask the question,
'Here's the Farm, but where's the Soil'?"

—Tenn Ex. Review

HORTICULTURE

HOME STORAGE OF VEGETABLES

Although the season of garden planting is over for another year, there is still an abundance of food available in your garden. A goodly share of this will soon cease to exist. A little care will prevent this loss and, at the same time, supply the farm table with an abundance of fresh vegetables through the winter months. Store this food and thereby reduce the cost of the winter menu, as well as improve the health of the family.

The successful storage of vegetables is not difficult. In fact, good storage facilities are already available on most farms. There are two chief types of home storage, cellar storage and pit storage. A cool, well ventilated cellar under the dwelling offers good conditions for the storage of vegetables, provided the cellar is properly insulated. If the cellar contains a furnace, a room may be partitioned off at one end, suitable for the storage of vegetables. Ventilation may be afforded by windows. Beets, carrots, turnips, rutabagas, Irish potatoes, salsify and parsnips may be stored in such a cellar. Do not store cabbage in a cellar or basement beneath the home; the odors will penetrate the dwelling.

Another type of storage, closely allied to the above, is the outdoor storage cellar. It may be easily constructed and affords a convenient and inexpensive storage for surplus vegetables. Storage rooms above the surface of the ground may also be used but the temperature is more difficult to control. Many gardeners, however, lack a good storage cellar, either under the house or outdoors. In that case, they can secure very satisfactory results with pit storage.

If pit storage is to be used, select a well-drained place in the garden or in some place convenient to the kitchen. The pit may be of any convenient size, but it is suggested that several small pits be made rather than one large one. When a pit is once opened, it is desirable to remove all the contents at once, thus the advisability of the small pit. For the same reason, it is best to store small quantities of several crops in each pit. It will then be necessary to open only one pit in order to secure a supply of all vegetables.

After deciding upon the location of the pit, dig out the soil to a depth of six to eight inches over an area sufficiently large to accommodate the vegetables to be stored. Place a layer of three or four inches of straw or cornstalks in the bottom of this pit and place the vegetables in a conical pile on top of this material. They are generally piled to form a mound about 2½ or 3 feet in height. Cover with a layer of straw or cornstalks, and then place a layer of dirt to the depth of two or three inches. As winter approaches, increase the dirt covering until it is from four to six inches deep. Ventilate through a small opening in the top of the pit, loosely filled with straw or cornstalks and covered to prevent rain entering the pit. Dig shallow trenches to conduct the water away from the pit.

Among the vegetables that may be kept in pit storage are Irish potatoes, beets, carrots, turnips, rutabagas, parsnips, and salsify. Parsnips and salsify may be left in the ground if desired, as freezing does not injure these two crops. Spinach and kale will also live through the winter in normal years. Sweet potatoes for home use should be placed in the basement near the furnace, on a shelf near the kitchen stove, or near the chimney on the second floor.

Onions should be stored in a dry, well-ventilated place such as the attic. Pumpkins and squash may be kept in dry, well-ventilated cellars, but a dry, frost-proof place above the ground is best. Individual specimens should not be allowed to touch each other. Cabbage may be stored in outdoor cellars or pits, and celery in a specially constructed trench, or in a hotbed pit.

Tomatoes may be picked green and stored on shelves in the cellar, allowing a small space between each fruit. Another method is to pull the entire plant and hang it up in the cellar. The green fruit will gradually ripen and become available for use.

Beans and peas should be picked as soon as mature and spread out on a warm dry place such as the attic floor until thoroughly dried. They should then be shelled out and stored in bags in a dry well-ventilated place. If infested with weevils, they should be fumigated with carbon bisulfide.

Store the surplus food for winter use. For additional information, see your county agent, or write the Vegetable Extension Service, V. P. I., Blacksburg, Virginia.

STORAGE OF SWEET POTATOES

The value of the storage crop of sweet potatoes in Virginia is increasing annually. Thousands of dollars are returned each year to the growers from this source. This return would be greatly augmented, however, if storage losses would be reduced to a minimum. How can such losses be reduced? The answer is clear and simple, by proper storage.

A discussion of the storage of sweet potatoes properly begins in the field for it is here that most of the trouble originates. Careless handling is the root of most of the evil. The following suggestions are offered to assist in cutting down on these losses. If carefully followed, they should add many dollars to the value of the crop.

Time of Harvest

Harvest sweet potatoes when mature but before a killing frost.

A test of maturity may be made by breaking a potato in two pieces. If mature, there will be a little sap, and the broken surface will turn white and appear dry after being exposed to sun a few minutes. If immature, the sap will be more plentiful, and the surface of the potato will appear dark or black spotted.

Harvesting and Handling in the Field

Clip vines, using a method that will not bruise potatoes.

Harvest potatoes with a large turn plow or standard potato plow. Plow deep in order to avoid cutting potatoes, as cut potatoes cannot be marketed. Handle potatoes for market with greatest care. Probably more potatoes are lost by growers as a result of careless handling than from all other causes.

Use heap rows, piling not more than three rows of potatoes together.

Avoid pitching potatoes in piles.

Do not allow potatoes to remain in the field over night.

Grading

Grading should be done in the field. Separate culls and injured potatoes from marketable potatoes. Frost-bitten potatoes will not cure properly and should be classed as culls.

Place potatoes in the containers that are to be used in the storage house.

Do not heap potatoes above top of crate. Do not nail lids on crates.

In order to prevent bruising haul potatoes from field to storage house with care.

Grades

The following official grades for Virginia as well as for the United States at large should be observed in grading potatoes:

Grade No. 1. Diameter, smallest 1⅝ inches, largest 3½ inches; length, shortest 3 inches, longest 10 inches. Note these exceptions: the length may be less than 3 inches if the diameter is 2 inches or more.

Grade No. 2. Diameter, smallest 1½ inches, largest 4 inches. No length specified.

Note—All potatoes of the above size not meeting the length requirements of Grade No. 1 will be placed in No. 2.

All grades should consist of sound sweet potatoes of similar varietal characteristics which are practically free from dirt and other foreign matter, pest injury, decay, bruises, cuts, scars, cracks and damage caused by heat, disease, insects, mechanical or other means.

Storing

Store potatoes in crates in the storage house, stacking them at least four inches off the floor and six inches from the wall so as to allow plenty of ventilating space between each row of crates.

It is advisable to use 1 by 1 inch strips between the layers of crates. Do not nail strips to crates.

Do not stack potatoes to the ceiling; allow plenty of room above potatoes for a good circulation of air. Store potatoes within three days in one compartment. Store No. 1 and No. 2 potatoes in separate sections of the house.

Curing

The factors that make for success in storing sweet potatoes are: first, control of moisture; second, uniform temperature.

When the house is filled, raise the temperature to around 80 or 85 degrees. Keep a close watch upon the house during the curing period and maintain as uniform a temperature as possible. At the same time give the house all possible ventilation. Close the floor ventilators and doors at night if there is likelihood of frost. Close the top ventilators in cold or rainy weather.

Maintain a temperature of from 80 to 85 degrees during the curing period, which is usually from ten to fourteen days, depending upon the weather and condition of potatoes.

When the curing period is over (if they have a velvety feeling or the eyes or buds on the potatoes throughout the house show signs of sprouting, they have been properly cured) lower the temperature to between 50 and 55 degrees as soon as possible, never allowing it to go below 45 degrees.

Examine the house each day. When dampness is found, open the top ventilators and use a little fire if necessary. Watch the house to keep down all moisture, using the best of judgment at all times in ventilating and heating. Every house should be provided with a number of good, standard thermometers. One should be placed near the floor and one near the top of the house so that a check may be kept on heat and ventilation. Place one man in charge of storage house.

In its soil, the nation holds a trust for its farmers, its businesses, and all of its citizen-consumers. Not to make it possible for farmers to operate their soil on a self-renewing basis would be to betray that trust. If farmers are forced to use up their capital—the soil—rather than the annual interest of usable fertility which nature adds to it through wise cropping practices, then the farm, the farmer, the consumer and finally the nation, will be bankrupt together in the end.

COOPERATIVES IN VIRGINIA

(Continued from page 8)

duction. Valio operates two butter shops in Helsingfors in order to regulate the retail selling price.

When we reached Russia, we found that a governmental decree had in late 1935 converted all the city consumer cooperative stores into state stores, operated by the respective government trusts. The cooperative purchasing movement was directed to devote its attention to the village cooperative stores. These village co-ops are all affiliated with their proper district and regional wholesale and educational federation, which in turn is affiliated with Centrosoyus—the national cooperative wholesale and educational organization.

When we visited some of the village cooperative stores, we discovered a great variation in their buildings, equipment and stocks of goods. In the villages near Moscow, the buildings were modern and up-to-date, well equipped and neatly kept. They were well stocked with food products, notions, school supplies, and there was a limited selection of clothing, stockings, and shoes. A wider selection of goods is maintained in the co-op stores in the larger towns.

With a Russian friend I went to visit some villages about 15 miles from the railroad in the black soil region about 350 miles east of Moscow. There we found conditions very primitive. The co-op stores were in mud walled huts with a thatched straw roof. The windows were few and small and there was only the very simplest of country store equipment. The stock of goods was limited to only a few staple grocery articles, a small selection of school supplies and notions, a few pair of shoes and slippers, a few stockings and work shirts and sweaters, and a few small harness parts. Centrosoyus still has a tremendous task ahead of it to bring the back-country village co-op stores up to a satisfactory standard of operation.

In Russia peasants almost all live in villages of from 25 to 350 families, with the usual size being about 100 families. Ninety percent of all peasant families are now members of collective farms. Each village is organized into a collective farm and cooperatively farms about 2000 acres of land around the village. A typical collective farm is divided into 4 brigades and each brigade is given charge of a section of the farm to operate. As far as possible the work is done on a piece work basis, the people receiving a share in the harvest in proportion to the work they have done. Of the collective farmers we talked to, all but a few of the old people liked the collective farming better than individual farming and said they were getting a larger annual income. The Russians seem to like to work in groups and seem to enjoy the social contacts that come through the collective farming operations.

DROUGHT TAUGHT A LESSON

Drought in the South this year has taught farmers the importance of saving the soil. Where the topsoil had been well protected from erosion stands of cotton, corn and other crops did not seem to be seriously affected by the drought. Where the topsoil had been lost through sheet erosion, the land was baked, and had a very poor stand. It is the first few inches of the topsoil which contain most of the organic matter and fertility necessary for plant growth and as erosion removes this top layer, the fertility and productivity of the land is diminished and is especially noticeable in years of insufficient moisture.

—Southern Agriculturalist

FARM MANAGEMENT AGRONOMY SOILS CROPS

Use Better Seed—It Means Larger Yields, Better Quality Crops, and More Profits

STATE SEED SHOW FOR 1937

Growers and exhibitors of high class seeds are urged to preserve their samples sent to the autumn fairs for the State Seed Show this winter. This show and convention will be held at Marion during the latter part of January and will offer the same attractive prizes as in the past.

The preliminary premium list will be sent out shortly to the county agents and vocational instructors.

PLANT FOOD DEFICIENCIES

Crops frequently give very clear indications of the plant food needs of the soil. Such indications have been very apparent throughout the state this season, especially in some of the areas receiving small amounts of rainfall. Any close observer has seen such indicated plant food deficiencies but has perhaps considered their importance little, if at all, since the cause was unknown. The production of the most profitable crops is impossible where plant food deficiencies are shown by the plant. When the deficiency of plant food in the soil is sufficient to be shown by the plant, the supply in the soil is much too low for plant needs. If one unit of plant food is very low, other plant food units cannot produce the maximum results, even when they are present in abundant quantities.

The question is asked, why should deficiencies of plant food in the soil be as apparent or more apparent this season than in seasons of abundant rainfall? The plant takes in through its roots its food dissolved in water. If plant food and water are both abundant, the plant shows no deficiencies and produces maximum growth under the conditions prevailing. If water is deficient, and plant food abundant, the solution becomes more concentrated and the plant seldom shows any plant food deficiencies, the decreased growth being due to lack of water. If water is abundant and plant food deficient, the solution becomes less concentrated and the plant necessarily must absorb more solution to secure the required amount of plant food. Deficiencies of plant food may be shown by the plant if the supply in the soil is low. If both water and plant food are deficient, as was the case this season on many farms, plant food deficiencies in the soil are shown very clearly by the plant.

The presence of an abundant supply of plant food in the soil enables the plant better to withstand drouth and produce larger yields. This fact has been clearly demonstrated this season. Corn grown this season on soil containing an abundance of plant food and organic matter produced 40 to 50 bushels per acre in some of the drier areas, while corn on soils deficient in plant food and organic matter did not produce sufficient yields to pay costs of production.

Plant food deficiencies in the soil are shown by many crops and are easily discernible. Potash deficiency is perhaps one of the easiest to detect. The general symptoms are susceptability to disease, leaves drying prematurely from the margin to the midrib, and general lack of vigor and quality in the plant. Potash deficiency in alfalfa is marked by small white spots the size of a pin head developing first on the margin of the leaf, and advancing to the center of the leaf; the margins of the leaf in more severe cases turn yellow and die. At first only a few leaves may be affected. Clover shows practically the same symptoms as alfalfa. The first external symptom in corn is fading of the green color between the veins of the leaf, producing a striped effect. The margins of the older leaves "fire" and die. The plant has a weak root development and in cases of marked deficiency dies early and lodges badly. Ears have soft cobs, chaffy grains and prematurely broken shanks.

Cowpeas and soybeans become yellowish-white in color and the leaf as a whole becomes greyish and puckered in appearance. In the later stages the leaf margins turn brown, curl downward and die.

Small grain symptoms are similar to those noted for corn when potash is deficient. The proportion of grain to straw is usually low, the heads are imperfectly formed, and in some cases barren; and the grain is small, thin and light in weight.

Potash deficiency is easily detected in tobacco leaves. The leaf becomes yellowish, mottled, drooped, curled under at the edges, and has a harsh roughened surface. The centers of the mottled areas are usually dead or dying. In the early stages the dead areas appear as numerous specks at the tip and around the margin of the leaf, gradually enlarging and merging.

Nitrogen deficiency is indicated by a sluggish growth of the plant, and leaves are yellowish in color. The plants tend to fire and the leaves die from the midrib outward to the margin; while with potash deficiency the leaves die from the margin inward to the midrib. Plants tend to produce seed prematurely.

Phosphorus deficiency is indicated by a slow maturity of plant and grain. The grain is frequently shriveled and poorly developed. Corn ears are poorly filled at the tip. Clover stands are frequently good but the yield is poor. If the vegetative growth of cereals is good but the yield of grain is low, phosphorus is perhaps deficient in the soil.

Plants frequently give indications of plant food deficiencies other than the three mentioned above, but these will not be discussed. Nitrogen, phosphorus and potash deficiencies are the most numerous.

It must be remembered that when plants show any of the above mentioned symptoms of deficiency, the supply of the particular plant food is very low. Plant food should be supplied before the symptoms of deficiency occur, because yields have been continually reduced for many years before the symptoms are apparent.

The harvesting of crops on the farm is about finished, and now seems an opportune time to check up on the yields and quality of the crops. Are they satisfactory? If not, the reason must be determined. The crops themselves have told their needs in many instances and certainly these needs must be satisfied in the future. The fact that most of the soils in Virginia are deficient in available plant food, and that sufficient additions of plant food must be made to satisfy this need if profitable yields are to be secured, must be recognized in the future. Plants growing on the soil are continually removing plant food; these plants are harvested for hay, grain, or other purposes and the plant food lost from the soil. Such a procedure has been followed for many years, causing deficiencies to occur which are indicated by the plant. Plant food must be returned to the soil through fertilizers, crop residues or similar methods.

Breeders of purebred sheep agree that the typical flock owner pays too little attention to selecting a ram.

PUT SOMETHING BACK

The story is told of a man who said: "I put a little money into a bank and got a check book so that I might draw it out as I wanted, in sums to suit. Things went nicely for a time. Scratching with a pen was as easy as rubbing Aladdin's Lamp; and my blank check book seemed a dictionary of possibilities, in which I could find all the symptoms of happiness, and realize any one of them on the spot. At last one day a check came back to me with these two words on it—'No Funds'."

And so it is with much of our farm land. We buy a farm because of its fertile soil and expect it to produce profitably year after year without any additions to it. We continue to check-out, but never deposit. Soil is valuable only in the proportion that it contains plant food. When the plant food is robbed by cropping and leaching, the land becomes impoverished and the farmer finds himself paying taxes on a piece of property that will not produce. Much of our land has already begun to reflect "no funds." That's what we like most about the new farm program, it puts a premium on soil building practices.

—Southern Planter

USE YOUR PAID SERVANTS

In nearly every agricultural county of the country a County Farm Agent, one or more assistant County Agents, a Home Demonstration Agent, and one to several vocational agriculture teachers are employed as the recognized leaders and paid servants of the farming interests of the county. In spite of the fact that this service has been available in most counties for a quarter of a century and has proved highly popular and profitable with farm people we sometimes hear complaints from farmers that they planted the wrong crop or the wrong variety of seed or that they used the wrong sort of fertilizer or bought the wrong implement or made a bad selection of dairy cows or poultry. In investigating these costly mistakes it is almost always found that the complaining party did not consult the County Agent or other local agricultural representative of the government whose duty and pleasure it is to give this very service to farmers. The business of farming is a difficult and complex one in which new problems arise daily, hence the services of well trained farm specialists are made easily available to all. These specialists fill just as necessary and important a place in the field of agriculture as the doctor does in the field of health, the lawyer in the legal field, or the auto mechanic in the transportation business. It is no more a discredit or reflection on a good farmer to seek the aid and counsel of these paid agricultural workers than it is to call on the lawyer, physician, electrician or mechanic when their services are needed.

—Southern Agriculturist

"For the brave business of making ourselves superior always as human beings to our physical sciences we need both a philosophy and a taste. A philosophy which tells us that even though truth does not change, it does accumulate, that the copy-book maxims were once original copy, and that new maxims, new truths, are to be found and adopted as our days go on. A taste which returns us to that grace in living "which we have loved long since and lost a while," to good manners, self discipline, a sense of beauty and texture in living, and a presumption of the dignity and importance of individual being."

—JOHN TEMPLE GRAVES

POULTRY

MARKET ONLY PROPERLY FINISHED TURKEYS

Is fifty cents net profit more for each turkey sold worth while? This much, and in some cases even more per bird, can be realized by turkey growers who market only high quality, properly finished birds. Turkey growers suffer tremendous losses each year because of the sale of poorly finished birds. The following illustrates this well: There is usually a difference of four to five cents per pound between top and second grade birds. A 14-pound No. 2 turkey at 15 cents, for example, would net $2.10. If this turkey were full fed for two more weeks, it probably would grade No. 1; then the net return might be 16 pounds at 18 cents, or $2.88. Even if this required 10 or 12 additional pounds of feed, there is still an excellent profit in selling only the highest quality birds. On the other hand, turkeys should be marketed just so soon as they are finished. After this, further feeding is expensive and the gains relatively slow.

"Agricultural producers, as a group, do not spend as much time in preparing their products for market as they should, to get the greatest return on their enterprise." The average American family still uses only one turkey per year. A dressed turkey of average size when it reaches the consumer represents a big investment. It must be well finished, properly dressed, and attractive in appearance. Otherwise the producer often loses a large part of his profits each year and, in addition, the turkey industry as a whole is injured.

Before any turkeys are sold, the breeding stock for 1937 should be selected. Then, picking out only properly finished or fattened turkeys that will grade U. S. Special, the highest grade, requires individual handling of the birds. A finished turkey will have a very full, well rounded breast, back and thighs well covered with fat, and few pin feathers. Birds with many pin feathers indicate incomplete growth and such turkeys will never be placed in the top grade. Look carefully at the skin; a blue finish indicates poor quality; these birds should never be marketed.

With the majority of strains of turkeys today, from 24 to 28 weeks will be necessary to bring most birds to maturity. Furthermore, well finished birds can be produced in this time only if a proper feeding program has been followed throughout the entire growing season.

This year in particular with comparatively high feed prices, and in some important turkey sections a shortage or even lack of feed, many turkeys are going to be sold in a very poorly finished condition. Such a situation, coming together with an increase in turkey production in 1936, will result in a great many poor quality turkeys on the market. This year, therefore, it is especially important, and it will mean even more than the usual profit, that only the best quality turkeys are shipped to market.

Whether turkeys are to be sold alive or carefully dressed at home will be influenced by several factors. Nearly always more money can be made by selling only properly dressed birds. However, if either experience in dressing turkeys or the desire to learn to do the job properly is lacking, by all means the turkeys should be sold alive.

For those who want the latest information on dressing and marketing the turkey crop, Farmers' Bulletin 1694 has been prepared by T. W. Heitz who has had years of experience in marketing this class of poultry all over the United States. If you have any turkeys, get a copy of this free bulletin by sending a postcard to the Poultry Department, V. P. I., then study it carefully. The result will be more profit from the turkey enterprise regardless of its size.

Market Only Properly Finished Turkeys, But Select Breeding Stock First

The great importance of selecting the breeding stock for 1937 before any turkeys are sold was mentioned above. This point cannot be emphasized too much. There are still far too many turkey growers who use, as a source of breeding stock, what is left after marketing the best birds. In a very few years, even if new blood is brought into the flock, this can result in nothing but deterioration. For the Thanksgiving market the earliest maturing, best finished birds are sold; at Christmas this same practice may be followed; and if turkeys were late and the producer caters to the New Year trade, the remainder of the best are disposed of then. With such a plan what is left for breeders? Only the worst turkeys in the entire flock.

Probably only some of the producers of smaller flocks of turkeys in Virginia are guilty of this. Growers who depend on turkeys for a larger share of the farm income have learned the importance of selecting breeding stock early.

Early maturity is of prime importance. Among different strains of the same breed of turkeys there will be found great differences in growth rates. For example, at 20 weeks of age one Bronze turkey male might weigh 14 pounds, while another under exactly the same environment (feeding, range conditions, etc.) might weigh 16 pounds. Which is the better turkey? While the larger bird probably used some more feed, the extra feed cost represents a much smaller expenditure than the two extra pounds of turkey at say 20 cents per pound would return. The earliest maturing, and usually the heaviest, birds should, therefore, be selected for breeders. Avoid long-legged rangy birds, particularly noticeable in the males. Such a condition is nearly always associated with slow maturity. When several hatches run together, nearly always the case in small flocks, if the birds are not banded, marked, or identified in some way so their ages are known, it is almost impossible to make a good job of selection for early maturity. In such a case a fast growing bird at 20 weeks might weigh just as much as a slow grower would at 22 or 23 weeks.

If new breeding stock is needed for 1937, purchase it early this fall. There are several good reasons for this:

1. The other turkey grower, from whom you plan to buy, may have sold his best stock for market.
2. If breeding stock, usually new males, is not obtained till March, the other fellow will probably have the best birds.
3. If a tom with good standard qualities is wanted, these show up just as well at 24 to 28 weeks as later. In fact, it is much better to buy at 24 to 28 weeks because then the male's weight at maturity is known.
4. Breeding males will be more expensive in spring and the same selection is not possible; often, indeed, if your purchase is left too late, males may not be available.

Nutmeg and mace come from both the East and the West Indies, cloves from Zanzibar, allspice and ginger from Jamaica.

COOPERATIVES IN VIRGINIA

(Dr. Gordon Ward, asst. agricultural economist, has been traveling in Europe for several months with a group of economists studying cooperatives and cooperative marketing. He writes this letter as his contribution to this month's issue of the Extension Division News.)

Dear Editor:

From Copenhagen the Cooperative League Tour travelled northward to Stockholm, the headquarters for the Swedish cooperative movement. In Sweden the major farm products are marketed through well developed cooperative organizations and the cooperative purchasing movement owns many important factories for supplying commodities to the members.

Local cooperatives for making butter and cheese were started as far back as 1880, but there was no real cooperation of these locals until 1930. In that year national marketing associations were developed for each of the major farm products. The national federations for milk and dairy products and for meat have made great progress. The dairy federation handles the exporting of the surplus butter under the stabilization program.

One of the strongest member associations is the Stockholm Milk Central, which supplies 90 percent of the milk for the city of Stockholm, which has a population of about 750,000. The co-op handles about 60,000 gallons of milk per day for the city because the consumption is high, about ¾ of a quart per person per day. The greatest part of the milk is handled in bulk in cans and only a small proportion is bottled.

The milk is generally pasteurized in the big co-op plant in the city and put into 10 gallon cans which are hauled on trucks to the retail dairy shops. The co-op bought a chain of the dairy shops and now operates 150 of these scattered over the city, as well as supplying milk to the grocery stores operated by the Stockholm Cooperative Society—a consumers cooperative purchasing association. The consumers bring their little cans and pitchers and bottles to the little dairy shops and have the desired quantity ladled out of the 10-gallon can into their container.

With strict sanitary supervision, this system seems to work satisfactorily from a health standpoint and provides the consumers with cheap milk. The consumer pays 6 cents a quart for milk at the dairy shop while the producer receives about 15 cents a gallon for 3.5 percent milk. With such a heavy production of milk and no special health requirements for supplying milk to cities, the price for fluid milk is determined by the butter price, and hence is low.

The cooperative purchasing movement is one of the strongest cooperative developments in Sweden. About one-third of all the families in Sweden are members of the purchasing associations, which operate stores handling all kinds of foods, clothing and other household necessities. In the towns and villages, the co-op store also handles the feed, seed and fertilizer needed by the farmer members, who make up the bulk of the membership in the rural districts. The majority of the purchasing associations are rural organizations.

The vast majority of the co-op stores are members of the Koopertiva Forbundet—KF, it is generally called. The retail co-op stores do about 10 percent of all the retail in Sweden and about 15 percent of the retail trade in foodstuffs. The locals buy most of their requirements through KF, which therefore has a sufficient volume to make it advantageous to operate its own factories in many lines. It has entered production particularly in those lines of production where trusts have been maintaining unreasonably high prices.

KF first started manufacturing in 1900, when it sought to reduce the price of margarine. KF now manufactures over half the margarine produced in Sweden and sets the price to provide only a reasonable margin above cost. The rubber shoe industry, flour milling, oat meal milling, rye bread baking and electric light bulb manufacture have all been successfully entered by KF to break the monopoly price control.

The cooperative movement has now accumulated sufficient capital that it can enter the production of any article when the price asked by the manufacturer appears unreasonable, and this serves to keep the price level on manufactured goods reasonably low throughout Sweden. The co-op retail stores see that the retail margins are also kept low. The co-op shops take a margin of about 10 percent and pay patronage dividends of from 2 to 3 percent.

KF maintains a very large and effective educational department. It conducts the largest general correspondence school in Sweden, with cooperation as only one of the many subjects offered. KF provides the materials used by the 2000 discussion groups attended last winter by 30,000 of the 600,000 members of local co-op stores. Cooperative topics are one of the important subjects discussed by the groups. A popular cooperative paper is issued semi-monthly with a circulation of 500,000. KF also owns 20 motion picture machines which are used in local meetings for educational purposes. A co-op college is conducted to train the young people entering the employ of co-op stores and KF.

In Finland we also found a strongly organized cooperative movement, with the largest development in cooperative purchasing. The purchasing movement, however, is divided into two organizations with affiliations. The local co-op stores in the towns and villages are members of SOK, which serves as their cooperative wholesale and supplies them with feeds, fertilizer and seeds and other farm supplies in addition to foods and clothing and other household supplies. SOK maintains an active educational department and operates a training school for employees of the local stores.

The city worker cooperators split off from SOK in 1918 because they considered that voting in the annual meetign of the co-op wholesale should be in proportion to the membership of local societies instead of each society having one vote regardless of its size. They set up a new co-op wholesale called OTK which has an affiliated educational union called KK (The Finish names are very long and almost un-pronouncable).

KK has 6 full-time speakers who attend the cooperative festivals arranged by the local co-op store groups. The festival lasts two or three days and includes moving pictures on co-op subjects and comedies, music and dancing, in addition to the co-op speakers. These festivals have proved effective in interesting new members in joining and in educating the membership. Monthly papers are sent to the members and to the cooperative employees. KK supplies trained organizers free of charge to groups trying to start a new co-op and assists in developing local membership campaigns.

In Helsingfors the cooperative milk marketing association is by far the most important in the city, supplying the bulk of the volume. The milk comes from the farms and country receiving depots in 10 gallon cans. At the co-op plant the milk is mixed and cooled, placed in sterilized 10 gallon cans and sent from there to the retail dairy shops. Even though handled raw and dipped into the consumer's containers, the milk has introduced no serious health trouble. The consumers pay about 4 cents a quart at the shop and the farmer receives about 12 cents a gallon for 3.6 percent milk. The producers' co-op bought out a chain of retail shops and operates about 120 throughout the city.

The co-op creameries and cheese plants throughout Finland are almost all members of the national federation Valio. Valio is by far the largest handler of dairy products in the country and administers the government export program. Enough butter is exoprted to maintain a price for butter sold in Finland sufficiently high to cover the cost of pro-

(Continued on page 6)

The Virginia Agricultural Situation

WHAT TO PRODUCE—HOW MUCH TO PRODUCE—WHEN TO SELL

Foresight springs from intimate knowledge of the past

Prices on Virginia farms as reported by the Virginia and the United States Departments of Agriculture, show 3 increases and 5 decreases during the month. During the year the largest increase was in Irish potatoes, while the largest drop was in Beef Cattle.

	VIRGINIA PRICE				RELATIVE PRICE *Compared with ex. of 100 during 1910-1914*		
	Sept. 15 1936 (now)	Aug. 15 1936 (mo. ago)	Sept. 15 1935 (yr. ago)	Average 5 years 1910 to 1914	Sept. (now)	Aug. (mo. ago)	Sept. (yr. ago)
Farmers' purchases (U. S. retail)						123	123
LIVESTOCK:							
Hogs, per 100 pounds	$9.80	$9.90	$10.20	$7.38	132	134	138
Beef cattle, per 100 pounds	5.80	5.80	6.40	5.21	111	111	123
Lambs, per 100 pounds	8.30	8.30	7.60	6.19	134	134	123
LIVESTOCK PRODUCTS:							
Farm butter, per pound	.24	.23	.21	.24	100	96	88
Butterfat, per pound	.32	.32	.22				
Wool, per pound	.32	.33	.25	.22	145	150	114
Eggs, per dozen	.26	.23	.28	.20	130	115	140
Chickens, per pound	.17	.17	.17	.14	121	121	121
CROPS:							
Wheat, per bushel	1.10	1.08	.84	1.00	110	108	84
Cotton, per pound	.120	.120	.110	.115	104	104	96
Potatoes, per bushel	1.25	1.30	.45	.84	148	155	54
Sweet potatoes, per bushel	.75	1.20	.60	.77	97	156	78
Apples, per bushel	.75	.80	.55	.62	121	129	89