

# ANNUAL REPORT

1934

Agricultural Engineering Department

Extension Division, V. P. I.

Blacksburg • Virginia

ANNUAL REPORT  
PROJECT NO. 10

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AGRICULTURAL ENGINEERING DEPARTMENT  
EXTENSION DIVISION

VIRGINIA POLYTECHNIC INSTITUTE

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December 1, 1933 to November 30, 1934

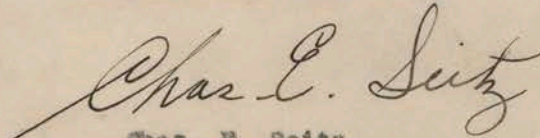
Blacksburg, Virginia  
January 23, 1935

Director John R. Hatcheson  
Agricultural Extension Division  
Virginia Polytechnic Institute  
Blacksburg, Virginia

Dear Director Hatcheson:

I am submitting herewith annual report of the extension work in agricultural engineering, in accordance with Project No. 10, Cooperative Extension Work in Agriculture and Home Economics, Virginia Polytechnic Institute, for the period beginning December 1, 1933 and ending November 30, 1934.

Respectfully submitted,



Chas. E. Seitz  
Extension Agr'l. Engineer

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Agricultural Engineering Department

Extension Division

Virginia Polytechnic Institute

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DEPARTMENT ORGANIZATION

PERSONNEL:

The extension personnel in agricultural engineering for the year has remained the same as for last year, namely; Chas. E. Seitz, agricultural engineer, J. A. Waller, Jr., associate agricultural engineer, H. H. Gordon, assistant agricultural engineer.

The resident instruction and research staff consisting of P. B. Potter and V. R. Hillman, associate professors, and J. W. Sjogren, assistant professor, has been added to as follows:

Miss Frances Hicks, B. S. and M. S. in Home Economics of this institution, was employed by the Agricultural Experiment Station beginning September 1. Miss Hicks will assist Professor Potter in Household Engineering Research.

Mr. Max Beane, an employee of the Tennessee Valley Authority, was assigned to this department November 5 to do research work in rural electrification.

Miss Victoria Harris, a graduate student in Home Economics, has been assigned to the department for her major study in Household Refrigeration for the M. S. degree.

STAFF ASSIGNMENTS:

Chas. E. Seitz, extension agricultural engineer, as administrative head of the department, has been responsible for the direction of all three divisions of the department; namely, resident instruction, research and extension. Administrative duties and various emergency activities have required considerable time spent in the office. However, the resident instruction and research staffs have contributed to the extension program which will more than offset any time spent by the head of the department on administering these divisions of work. Mr. Seitz has also been responsible for the regular extension projects in

rural electrification and the soil erosion area as well as the minor projects in irrigation and drainage. As contact man for the T. V. A. he has devoted considerable time to the T. V. A.

Mr. James A. Waller, Jr., associate extension agricultural engineer, has been responsible for the major extension project in terracing. He has also handled the extension activities in farm water supply and farm water power. He assisted in the training of county agents and production control men for the A. A. A. production control acreage measurement work.

Mr. H. H. Gordon, assistant extension agricultural engineer, has been responsible for the major extension projects in farm structures and farm development. He assisted with the Rural Housing Survey and the measurement work in production control for A. A. A.

Mr. V. E. Hillman, associate professor of agricultural engineering, who is employed by the college on the resident instruction staff has been of considerable assistance to the regular extension projects. Professor Hillman has assisted Mr. Gordon with the farm structures project by drawing plans, doing blueprinting and handling much of the correspondence in reference to plans. He has also assisted in preparing reports and survey data, etc., on the rural electrification survey. He assisted with the boys' short course at the annual 4-H Club meeting and had charge of the exhibit for the Institute of Rural Affairs. He served on the Quarters Committee for the Farmers' Institute and has been a member of the social service committee of the Blacksburg Community Federation.

Mr. P. B. Potter, associate professor of agricultural engineering, is employed for half-time resident instruction work for the college and half-time for research in household engineering for the Agricultural Experiment Station. Professor Potter has been of considerable assistance in our extension program. He has given a number of radio talks for the department, worked on household equipment plans for the home economics specialists and assisted with the boys' short course. Professor Potter devoted at least six weeks to the Rural Housing and Rural Electrification Surveys, two weeks being spent in the field training workers. He prepared plans and specifications for the improvement of the local high school grounds, was chairman of the Education Committee of the Community Federation and spent considerable time as consultant on the plans for the new high school. He served on the A.S.A.E. Committee on Farm House Equipment and faculty advisory committee for Alpha Zeta.

Mr. J. W. Sjogren, assistant professor of agricultural engineering, is employed half-time by the college for resident instruction and half-time by the Agricultural Experiment Station for research in farm machinery. Professor Sjogren assisted with the extension program to the extent of preparing several radio talks, answering letters in regard to farm machinery, instructing at the boys' short course and making a field trip to Amelia county in regard to soybean harvesting. Professor Sjogren is director of the Blacksburg Boy Scouts and a member of the Blacksburg Community Federation Committee.

PLAN OF WORK - LONG TIME PROGRAM

The long time program of work in agricultural engineering contemplates work in all the various sub-projects which for convenience in reporting, etc., are classified as follows:

Sub-Project 10-A, Land Reclamation  
 10-A-1, Land Drainage  
 10-A-2, Terracing  
 10-A-3, Land Clearing  
 10-A-4, Irrigation

Sub-Project 10-B, Farm Home Conveniences  
 10-B-1, Farm Water Supply  
 10-B-2, Farm Sanitation  
 10-B-3, Farm Home Equipment

Sub-Project 10-C, Rural Architecture  
 10-C-1, Farm Structures  
 10-C-2, Farmstead Planning  
 10-C-3, Rural Community Plans

Sub-Project 10-D, Farm Operating Equipment  
 10-D-1, Gas Engines and Tractors  
 10-D-2, Farm Implements

Sub-Project 10-E, Rural Electrification  
 10-E-1, Rural Line Extensions  
 10-E-2, Farm Water Power  
 10-E-3, Individual Light Plants

PLAN OF WORK FOR 1934

In the Plan of Work for 1934 major emphasis was placed on the following four projects:

1. Farm structures
2. Farm development
3. Erosion control
4. Rural electrification

Major emphasis was placed on these four projects because it was thought advisable to concentrate on fewer projects as was done the previous year, when it was found that considerable more could be accomplished by limiting the number of major projects.

Farm buildings or structures constitute about one-third of the value of all farm property. Through the farm structures project we are

able to render a real valuable service to the farmers of the state. Through properly designed and constructed buildings resulting from the use of our plan and field service the farmers are able to save thousands of dollars annually and secure the most efficient type of structures.

The farm development project has been underway now for about three years as an extension research type of project. The results secured to date have demonstrated that this method of conducting extension work has great possibilities. The T. V. A. is now considering using this method in the Valley area.

Soil erosion is a serious problem in at least half of the state. Great stress is being placed on this problem by the present Federal Administration indicating that we have not been wrong in placing this as one of our major projects for years. Terracing to control erosion on cultivated slopes has been found the most practical method in our Southern Piedmont counties. We are placing major emphasis on this method of control in some 25 counties of the state.

Rural electrification has been a major extension project for several years. The great interest and importance attached to this subject by the Federal Administration indicates that we have been right in stressing this project. Rural electrification offers greater possibilities for the improvement of rural life and standards of living than anything that could be done for the farmer. The future looks bright for some outstanding progress in this field.

SUMMARY OF EXTENSION SPECIALISTS' TIME

Specialist	: Days in Field	: Days in Office	: Agents Visited	: Counties Visited	: No. Visits to Counties	: Letters Written
Seitz	: 117	: 157	: 14	: 19	: 72	: 1170
Waller	: 174	: 106	: 34	: 42	: 63	: 903
Gordon	: 190	: 86	: 83	: 79	: 216	: 897

2970

WORK ACCOMPLISHED IN PLAN OF WORK FOR 1934

Cooperating Agencies:

In conducting the extension projects in agricultural engineering during the past year the specialists have cooperated with the following:

- The county agent in all county projects.
- The home demonstration agents in farm housing work and water supply.
- The horticultural specialist in the farm structures projects on fruit storage and stationary spray plants.
- The vegetable garden specialists in the sweet potato and vegetable storage projects.
- The poultry specialists in the poultry house and poultry accessory plans.
- The dairy specialist on all dairy and milk barn plans.
- The agricultural economics department in the farm development project.
- The agronomy department in the soil erosion and farm development projects.
- The home economics department on farm housing and water supply, etc.
- The Bureau of Agricultural Engineering of the U. S. Department of Agriculture in the Farm Development Project.
- The State Dairy and Food Division, Maryland and Virginia Milk Producers' Association and other local dairy associations in the farm structures project.
- The A. E. P. Company and the Virginia Electric & Power Company in the rural electrification project.
- The various governmental agencies such as T. V. A., A. A. A., S. E. S., F. E. R. A., C. W. A., F. H. A., F. P. C., etc., as outlined under Emergency Projects.



WORK ACCOMPLISHED IN PLAN OF WORK FOR 1934

## 1. FARM STRUCTURES PROJECT

This project is handled by a full time specialist devoting over 180 days to field work, including visits to the farms, study of conditions, and recommendations on the job as to plans and locations for buildings in question. This in addition to preparation of complete plans, blue prints and bills of materials. He also cooperates very closely with specialists in other departments, particularly the Horticultural, Vegetable Gardening, Dairy and Poultry specialists, both on plans and field work. He maintains close contact with the inspection service of the various city and state markets, and with the various cooperative marketing organizations. In this way he keeps up with the problems and requirements of the various markets, and secures a wider distribution of plans and greater standardization for the state as a whole.

Another of his projects is the Farm Development Project, a cooperative project between the Bureau of Agricultural Engineering, U. S. D. A., and the Departments of Agricultural Economics and Agricultural Engineering at V. P. I. On this project he is responsible for the selection of suitable cooperators and the contact work necessary for success of the project. During the past year a large part of his time has been spent on emergency work, particularly the Rural Housing Survey and compliance work for the Agricultural Adjustment Administration.

RESULTS:

With building costs mounting rapidly due to the N. R. A. and with the farm income still relatively low there has been a decrease in farm building during the past year. A year ago farmers could buy lumber at costs varying from \$8.00 to \$15.00 per thousand, depending on quality and locality. At such prices he could not afford to saw his own timber. Today under the N. R. A. he has to pay from \$20.00 to \$32.50 for the same lumber. Although the local sawmill operator gets only \$14.00 for his lumber delivered as much as 40 miles or more from his mill, he cannot sell his lumber locally at the mill to neighbors and farmers for less than \$20.00. As a result few farmers are building and many of the small country mills have been forced out of business.

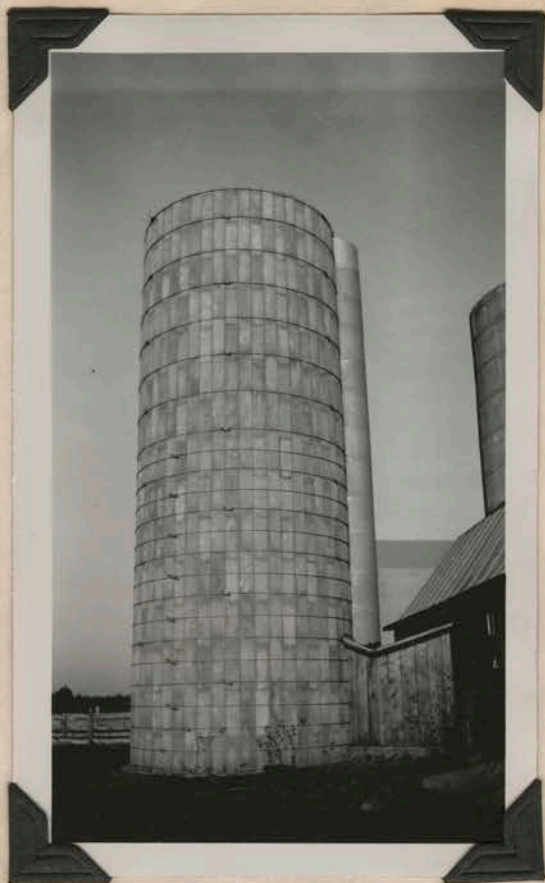
The cost of other building materials has risen in proportion. Under these conditions only those farmers who must build, or who can increase their income by building are doing so. The most striking evidence of this is in the demand for dairy plans. A comparison of plans furnished the past three years, shown below, brings this out strikingly. A large proportion of the poultry plans furnished are for the homemade



#1 - Milking parlor. V. P. I. dairy barns. This building houses a 4 stall tandem combine milker with full length observation room for spectators.



#2 - 40' x 80' combination apple packing and common storage for apples. V. P. I. Experimental orchards. Note ample lighting in middle of packing floor and ventilation in storage basement. Plan K-5.



#4 - Concrete stave silo. Many such silos are found in Virginia. They are very satisfactory and among the cheaper permanent type silos.



#3 - Tile granary in foreground and tile 36 x 62' horse barn in background. These buildings with tile 40 cow gambrel roof dairy barn replace buildings destroyed last year by fire. D-3.

brick brooder, an economy measure during the depression. The demand for house plans was stimulated by the Rural Housing Survey and the publicity attending it. While much interest in farm house plans had been manifested we have not been able to check on actual construction as we have in the case of other farm structures.

However, in the face of all these discouraging factors the demand for farm building plans has held up remarkably well. The large number of requests from individuals, and requests from counties without agents is encouraging as is the fact that the plans are being closely followed even by the contractors who in the past have taken many liberties with them, substituting too many of their own ideas to the hurt of the owner.

There is little doubt that as the purchasing power of the farmer increases and he becomes financially able to build, that there will be a great increase in the demand for plans. Farm buildings, generally, have been allowed to deteriorate rapidly and much replacement will be needed in the near future.

Plans Furnished Upon Request

	<u>1934</u>	<u>1933</u>	<u>1932</u>
House plans	477	47	28
Dairy buildings	296	607	1065
Beef cattle	15	27	30
Horse and general purpose barns	93	56	32
Sheep barns	7	9	10
Poultry houses	1777	1272	1092
Hog houses and equipment	30	61	62
Implement sheds	18	20	20
Storage houses	66	88	55
Packing sheds	13	29	25
Tobacco barns	6	21	40
Community buildings	137	15	10
Miscellaneous	140	160	172
	<u>3075</u>	<u>2412</u>	<u>2641</u>

The farm building specialist spent 190 days in the field, making 216 visits to 79 counties and working with 79 agents and four home agents. On these visits he helped farmers with 406 projects. In addition he trained 326 men in land measurement and worked with 168 on rural housing. 902 letters were written, 508 bulletins mailed out on building work, 14 water supply, 1 drainage, 1 terracing, 2 rural electrification and 4 hydro-electric visits were made for other specialists in the department. Approximately 30,000 miles were traveled on official work.



#5 - Twenty-four cow cinder block dairy barn plan B-2.  
Fauquier county. Score 100 on official score card.



#6 - Interior view of same barn, showing milking  
being done.



#7 - Cinder block dairy house - B-22 - with dairy barn #5.



#8 - Milk running over cooler in dairy house #6.  
Equipped with mechanical refrigeration.

Plans Revised and Retraced

- A-22 - Log cabin - retraced by W. H. Dickerson
- B-14 - One-row dairy barn - shed roof - retraced by W. H. Dickerson
- B-22 - Masonry dairy house - retraced by W. H. Dickerson
- B-24 - Frame dairy house - retraced by W. H. Dickerson
- B-37 - Cold storage room - retraced by W. H. Dickerson
- J-13 - Underground apple storage - retraced by W. H. Dickerson
- J-14 - " " " " " " " "
- H-30 - Sash greenhouse - " " " " "
- B-1 - Washington 2-story dairy barn (2 sheets retraced) - by W. H. D.

New Plans Prepared

- K-10 - Concrete spray tank - Drawn and traced by H. H. Gordon
- M- 8 - Grange hall - Drawn and traced by H. H. Gordon

Special Plans Prepared

	<u>Prepared by</u>
Suggested layout for Danville City Market for farm produce -	H. H. G.
Maternity pens for dairy cows -----	V. B. H.
Precipitating tank for acid washing machines for apples -----	V. B. H.
Grain storage bins for Experiment Station dairy barns -----	V. B. H.
Plan for V. P. I. dairy milking combine -----	H. H. G.
Remodeling plan for 10,000 bushel common storage for Chas. O'Neill, Crozet, Virginia -----	H. H. G.
Remodeling plan for 1500 bushel common storage for J. A. O'Neill, Crozet, Virginia -----	H. H. G.
Pasteurizing plant for Curles Neck Farm -----	H. H. G.
Pasteurizing plant for Winchester -----	H. H. G.
34' x 64' trussed roof implement shed -----	H. H. G.
Dairy barn remodeling plan for Mrs. Tritle, Covington, Va. -	H. H. G.
Dairy barn remodeling plan for G. O. Anderson, " " -	H. H. G.
Guest house for Mrs. Bessie Dunn Miller, Charlottesville, Va.	H. H. G.
Apple packing house and common storage for C. H. Kiser, Linden, Virginia -----	H. H. G.
Apple packing house for C. E. Newman, Woodstock, Va. -----	H. H. G.
Dairy barn remodeling plan for S. S. Wynn, Taxewell, Va. ----	H. H. G.
Cold storage plant for apples - capacity 12,000-18,000 bu. -	H. H. G.
Beef cattle feeding barn, Prentice Patteson, Manteo, Va. ----	H. H. G.
Slaughter house - 36x40 for R. S. Carter, Grahams Forge, Va.	H. H. G.
Map for wheat compliance director -----	H. H. G.
Map of Cluster Springs Academy property, Halifax county ----	H. H. G.
Map of Atwood Orchards property, Stuart, Va. -----	W. H. D.



#9 - Forty-Eight cow native stone dairy barn. Plan B-2. Parcellville, Virginia. Also scored 100 on official score card. Washington market.



#10 - Interior view of barn #9, showing cows' udders being washed for milking. Note 4 towels for each cow.



## 1. Farm Structures Project

Prepared by

Dairy barn remodeling plan, E. A. Wiseman, Fairfax, Va. --- H. H. G.  
 General purpose barn plan for P. E. Bird, Marion, Va. ---- H. H. G.  
 Plan for community livestock market, Taxewell, Va. ----- H. H. G.

Total of Plans Prepared:

V. E. Hillman	-	3	drawings,	3	tracings
H. H. Gordon	-	25	"	,25	"
W. H. Dickerson				11	"

Dairy Plans:

While dairy plans continue to be the most important phase of farm structures work, representing the greatest total investment and requiring the most personal service, the amount of actual construction is decidedly less than in past years. There are two reasons for this. First, the greater portion of the new construction made necessary by new state laws and city ordinances has been completed. Second, costs have mounted so high that only those who can secure a profitable market for their milk can afford to build.

Much work is still done through such marketing organizations as the Maryland and Virginia Milk Producers' Association. Such organizations follow our plans and recommendations in detail. Close contact is also kept with dairy inspectors. This is necessary not only to keep up with their requirements but also in many cases to keep them in check and see that they make reasonable and practical requirements and do not go wild on expensive fads the farmer cannot afford.

Relations with the Dairy & Food Division continue to be most satisfactory. Regulatory work claiming their attention almost entirely, leaving them relying on us exclusively for educational work, preparation of plans, and work of this nature.

Very few new plans and very little revision on stock plans was required. A number of remodeling plans were prepared and three pasteurizing plants, all of which have been constructed or are under construction. Where the plants used to depend largely on manufacturers of dairy equipment and on inspectors for plans we now get all such requests.

Horticultural Plans:

Interest in sweet potato storage, both individual and community, has been much greater the past year. Four new individual houses were

## 1. Farm Structures Project

built in Princess Anne county, one in Southampton, one in Cumberland, one in Isle of Wight. A community house was built at Hopewell for the storage of potatoes produced in rehabilitation gardens and on nearby farms. The Federal Reformatory near Hopewell also built for the institution. The Epileptic Colony at Lynchburg built for both sweet and Irish potatoes. While in Caroline county two community and five individual houses were constructed, taking care of a total of over 20,000 bushels in addition to the 10,000 bushels capacity in houses previously built. This places Caroline second only to Princess Anne in the curing and storage of sweet potatoes. Our plans for construction and directions for operation have been carefully followed as shown by a careful house to house visit during the curing period.

In Washington county an old stone silo 21' wide by 60' long and 20' deep was remodeled into a most satisfactory storage for certified Irish potatoes.

Interest in small cold storage plants for apples is increasing rapidly. E. G. Williams, Wytheville, Virginia, bought a used refrigeration plant at a bargain, added to the insulation of his common storage, built last year from our plans, and now has a very satisfactory small plant working perfectly. Malcolm Taylor, Wytheville, has started construction on a 40' x 80' combination apple packing and storage building for which he has already purchased refrigeration equipment. The Experiment Station, V. P. I., built a new 40' x 80' apple packing house and common storage combined, picture of which is shown. In addition, a number of buildings were remodeled for common storage according to sketches furnished.

Stationary Spray Plants:

Interest in stationary spray plants is increasing rapidly. Two new plants were installed during the year with most satisfactory results and plans are going ahead rapidly for installation of four more for the coming spray season. The last and largest of these being the 700 acre Atwood orchard, Stuart, Virginia. This installation will require 19 miles of pipe lines and will cost \$12,000 yet it will be less expensive than portable rigs and will be permanent.

The following interesting and complete figures were furnished us by E. B. Bonham, Chilhowie, Virginia. Mr. Bonham installed a stationary spray plant on 215 acres of his 300 acre orchard last season. The remaining 85 acres will be piped in the near future, but this year gave a most complete setup for a comparison between the stationary and portable methods. His figures are as follows:

Work Accomplished in Plan (Con'd.)  
1. Farm Structures Project

STATIONARY SPRAY  
215 Acres

First Spray

Amount material	41,500 gal.
Amount labor	620 hrs.
Amount gas	45 gal.
Amount oil	10 qts.

Second Spray

Amount material	43,500 gal.
Amount labor	658 hrs.
Amount gas	45 gal.
Amount oil	10 qts.

Third Spray

Amount material	54,000 gal.
Amount labor	784 hrs.
Amount gas	60 gal.
Oil	7 qts.

Fourth Spray

Amount material	39,500 gal.
Amount labor	588 hrs.
Amount gas	42 gal.
Amount oil	9 qts.

(Only trees with fruit  
sprayed from this on)

PORTABLE SPRAY  
85 Acres

First Spray

Amount material	18,450 gal.
Amount labor	300 hrs.
Amount gas	43 gal.
Amount oil	4 qts.
Two teams	45 hrs.
One tractor	45 hrs.
Kerosene	40 gal.
Oil	4 qts.

Second Spray

Amount material	18,750 gal.
Amount labor	300 hrs.
Amount gas	45 gal.
Amount oil	5 qts.
Two teams	45 hrs.
One tractor	45 hrs.
Kerosene	45 gal.
Oil	8 qts.

Third Spray

Amount material	19,400 gal.
Amount labor	307 hrs.
Amount gas	45 gal.
Amount oil	4 qts.
Two teams	49 hrs.
One tractor	49 hrs.
Kerosene	50 gal.
Oil	4 qts.

Fourth Spray

Amount material	20,000 gal.
Amount labor	313 hrs.
Amount gas	46 gal.
Amount oil	6 qts.
Two teams	54 hrs.
One tractor	54 hrs.
Kerosene	50 gal.
Oil	7 qts.

STATIONARY SPRAY

Fifth Spray

Amount material	43,500 gal.
Amount labor	540 hrs.
Amount gas	45 gal.
Amount oil	10 qts.

Sixth Spray

Amount material	45,000 gal.
Amount labor	600 hrs.
Amount gas	50 gal.
Amount oil	7 qts.

Seventh Spray

Amount material	39,500 gal.
Amount labor	602 hrs.
Amount gas	43 gal.
Amount oil	9 qts.

TOTALS

Material	308,500 gal.
Labor	4,392 hrs.
Gas	330 gal.
Oil	62 qts.

PORTABLE SPRAY

Fifth Spray

Amount material	21,075 gal.
Amount labor	325 hrs.
Amount gas	47 gal.
Amount oil	5 qts.
Two teams	56 hrs.
One tractor	56 hrs.
Kerosene	45 gal.
Oil	5 qts.

Sixth Spray

Amount material	21,100 gal.
Amount labor	330 hrs.
Amount gas	50 gal.
Amount oil	6 qts.
Two teams	57 hrs.
One tractor	57 hrs.
Kerosene	50 gal.
Oil	4 qts.

Seventh Spray

Amount material	21,135 gal.
Amount labor	317 hrs.
Amount gas	45 gal.
Amount oil	4 qts.
Two teams	54 hrs.
One tractor	50 hrs.
Kerosene	40 gal.
Oil	4 qts.

TOTALS

Material	140,410 gal.
Labor	2,192 hrs.
Gas	323 gal.
Oil	34 qts.
Number team hrs.	720 hrs.
Number tractor hrs.	349 hrs.
Number gal. kerosene	320 gal.
Number quarts oil	40 qts.



#18 - Old stone silo converted into Irish potato storage of large capacity. Remodeling costs about \$600.00.



#19 - 1,000 bushel individual sweet potato storage. Princess Anne.

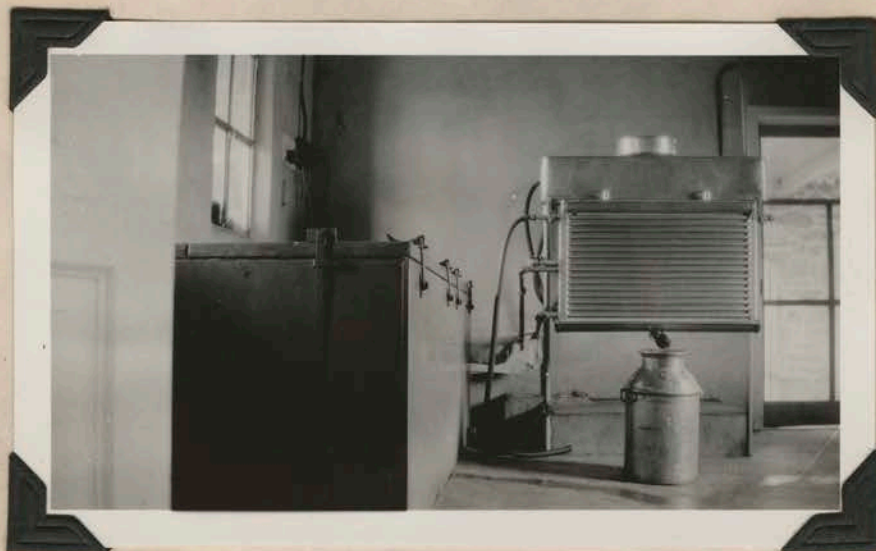


#20 - 5,000 bushel cinder block community sweet potato storage house, Sparta, Va.



#11 - Stone dairy house with dairy barn #9. Note towels for washing cows' udders hanging out to dry. Washing machines are regular equipment in many dairies supplying Washington market.

#12 - Interior view of #11 showing wash tanks and steam sterilizing cabinet required of all Washington shippers.



#13 - Cooling equipment in #11 including mechanical refrigeration.

Averages (Stationary method - 1435 gals. spray materials per acre  
(Portable method - 1652 " " " " " "  
  
(Stationary method - 20.4 man hours per acre  
(Portable method - 25.8 " " " " " "

Savings on 215 acres of use of stationary spray plant

1612½ man hours @ 12½¢	-----	\$ 201.56
1821 team hours @ 20 ¢		364.20
862 tractor hours @ 50¢		431.00
		<hr/>
		\$ 996.76 on a \$5000 investment

Poultry Plans:

Work on poultry plans was confined largely to preparation of a circular on "Brick Brooders" and utilization of existing buildings on the farms for poultry housing. The many unused tobacco barns in the state providing a large field for poultry expansion as a sideline. Such tobacco barns have a potential capacity of 200 laying hens, or if used with a brick brooder, 750 chicks either for broilers or for layers.

The brick brooder makes possible the utilization of home grown fuel and the safe brooding of chicks at a low cost. Many farmers already having necessary materials for their construction. A complete illustrated circular on brick brooders was prepared and has already had a wide circulation--nearly 900 of these plans have gone out to date.

House Plans:

The demand for house plans was greatly stimulated by the Rural Housing Survey conducted during the winter and by the preparation and publicity given six new small house designs prepared by experienced architects and draftsmen under supervision of the agricultural engineering department.

Three of these designs were chosen for the new U. S. D. A. bulletin on "Farm House Plans" and for the newly developed Exchange Plan Service between states. Under this arrangement the best designs from all states became available to each state. The large demand for house plans indicates a very widespread interest in small homes that can be built at a low cost. The trend is definitely away from the city to the country where living costs are less and where part of the living may be produced on small acreages.





#14 - Tile dairy barn - B-2 - Loudoun county.  
Under construction.



#15 - Frame dairy barn - B-1 - and frame dairy  
house B-24. Fauquier county. Note 50'  
concrete lane required by Washington  
market.



#16 - Interior view of 60 cow dairy barn.



#17 - Fifty foot concrete lane required of Washington shippers.

2. FARM DEVELOPMENT PROJECT

Farm Development Project:

There are now 23 farms in the Farm Development Project. They are located as follows: Four in Albemarle, one each in York, Warwick, Elizabeth City, two in Princess Anne, one in Appomattox, three in Botetourt, two in Rockingham, one each in Smyth and Wythe, two each in Taxewell, Lee and Scott counties. The last eight started only last year and no records are available as yet on their business since they became cooperators. Records for 1933 on the first 15 farms are as follows:

	<u>Farm Income</u>	
	<u>1933</u>	<u>1932</u>
-J. A. Jackson, Cloverdale, Va.	- \$ 945.00	\$ 495.00
-C. S. Ikenberry, Daleville, Va.	1000.00	- 349.00
-J. W. Sanderson, Hollins, Va.	3112.00	3195.00
-E. F. Showalter, Harrisonburg, Va.	614.00	681.00
-J. H. Burner, McCaheysville, Va.	- 662.00	- 2483.00
-A. W. Showalter, Tabb, Va.	- 1292.00	- 1766.00
-H. E. Yoder, Oyster Point, Va.	5497.00	5790.00
-J. S. D. Cummings, Hampton, Va. - Records not completed to date		
-F. E. Reader, Lynnhaven, Va.	50.00	- 802.00
-H. T. Etheridge, Back Bay, Va.	3997.00	1747.00
-Ira Fraye, Earlsyville, Va.	458.00	- 332.00
-J. C. Ballard, Decca, Va.	3756.00	- 139.00
-Geo. T. Carr, Charlottesville, Va.	3406.00	1400.00
-G. A. Dunlop, Charlottesville, Va.	- 1066.00	- 2193.00
J. R. Hersley, Appomattox, Va.	- 2038.00	- 842.00

Average of all incomes - 1932 = \$ 507.00

Average of all incomes - 1933 = \$1304.00

Agricultural engineering improvements on the above farms since the project began are:

C. S. Ikenberry - Stationary spray plant in orchard and new packing shed.

J. W. Sanderson - Extension of overhead irrigation system, terracing all steep land, drainage of wet land, new water supply, addition of basement to home.

H. E. Yoder - Practically completed drainage of system for entire farm, bought, cleared and drained 20 acres of land, cleared and put in pasture several acres of new land, filled a number of large ravines on place, built a new implement shed.

J. S. D. Cummings - Built isolation barn for dairy cows with Bangs Disease, cleared and put in cultivation several acres of grown up lands, cleaned, straightened and deepened ditches on farm, including fence hedge rows.

F. E. Reader - Built new implement shed.

R. T. Etheridge - Purchased general purpose tractor, greatly reducing cost of land preparation and cultivation of crops and enabling him to farm more land profitably.

G. A. Dunlop - Built new general purpose barn - 36' x 62'.

Among the new cooperators the following agricultural engineering work was done:

W. H. Moss, Burkes Garden - New horse barn, new poultry house, paddock for stallion.

Rhea Banner, Duffield - New Burley tobacco barn, new mowing machine, changes in field arrangement. Reduction in number of fields.

Paul McKee, Chilhowie - New brick silo - 14' x 36' for winter feeding cattle, greatly increasing carrying capacity of farm.

B. G. Williams, Wytheville - New apple packing and storage house, stationary spray plant, cold storage plant for apples, new water system, complete electrification of farm, including lights, portable motor, etc.

The enthusiasm of the cooperators and their keen interest in the project is most encouraging. While no startling results are apparent as yet, the general improvement is quite apparent and very gratifying. The improvement in certain individual farms is very evident. The cooperators are giving more thought to their operations, following suggestions carefully and profiting from them. It is hoped to broaden out the project and take on more farms in the near future.

#### Community Buildings:

Considerable time was spent during the year on community projects. These plans included a proposed farmers' market for the City of Danville to be built with P. W. A. funds. Grange hall plans to be erected with C. W. A. labor, community centers in Halifax and Orange counties to be financed by the C. W. A. and a community livestock market to be financed by the county and F. E. B. A. at Tazewell. The latter project has been approved and work will start December 1. The other projects were presented too late for approval last year, but it is hoped they will be approved and put through during the coming year. Plans were also prepared and buildings erected at V. P. I. as follows:

Grain storage for the dairy experimental barn  
Milking parlor for V. P. I. dairy herd  
Apple packing and storage house - Experiment Station orchard

Work Accomplished in Plan  
1. Farm Structures Project

(Con'd.)



Counties visited by Farm Building Specialist  
(All projects)

### 3. TERRACING PROJECT

For a number of years this project has been handled by individual and group terracing demonstrations where the farmers were instructed on methods of constructing terraces with their own equipment. After making a study of the Alabama plan of extension work in terracing as started in Tallapoosa county it has been decided that our efforts this coming year will be devoted to promoting a somewhat similar method of doing terracing. That is, county terracing organizations will be formed in different counties to purchase or lease large tractor and terrace outfits. These farm organizations will then employ the personnel and do the terracing work for farmers at cost. Halifax county is already organized on this basis and at least nine additional counties will be organized this coming year.

We have been following closely the development on the Soil Erosion Area at Chatham, Virginia. So far we cannot see how this type of work can be effectively extended as an extension project as it is far too costly. It is hoped, however, that some effective plan of cooperative and coordinated effort can be developed so that all the various agencies working in this field will at least be closer associated with the extension work.

As stated under "Emergency Work", Professor Seitz has cooperated with the Soil Erosion Service in getting that work organized in the state. He has also cooperated closely with the T. V. A. and definite plans for erosion control have been worked out for the Virginia counties in the Tennessee Valley. Erosion control work will start in these counties early in the new year.

#### Adult Work - Value of Terracing:

As an extension project terracing has become quite prominent. Of course, this is largely through Federal activity, but undoubtedly interest has grown because of state extension efforts also.

In the course of regular extension work 63,350 feet of terraces were marked out by the specialist and 25,300 feet were actually constructed as demonstrations. This work was done in fourteen (14) different counties, the largest portion being done in Dinwiddie, Kottoway, Charlotte, Campbell, Appomattox and Halifax counties. This number of feet of terraces protected at least 174 acres of farm land. According to the estimated acre value of terracing--\$6.54--makes this project have a value of \$1485.96. There were approximately 350 farmers at the above demonstrations.



Terraces in  
Franklin  
county after  
three years





Men from Mecklenburg county on terracing tour at  
Chatham, Virginia



Men from Halifax and Mecklenburg counties on terracing  
tour at Chatham, Virginia

TERRACING PROJECT



Boys' Work:

In addition to the adult work mentioned above six (6) lectures were given to classes of boys in Charlotte and Dinwiddie counties. One hundred and seventy-five boys attended these classes.

Special Short Courses:

The Hampden-Sydney 4-H Club short course was well attended this year. Fifty boys took the terracing and plane table work. Since it was just at the time that the tobacco and corn-hog supervisors were measuring tobacco and corn land it was thought appropriate to give some plane table work. It proved to be an exceptionally good project. Theory and practice in terrace running and construction was given as usual. It is a four-day course and the specialist had eight 45 minute periods. This is the third year the specialist has been invited to attend this short course.

County Terracing Demonstration Farms:

The large signs have been put up at the ten county terracing demonstration farms. They are in Appomattox, Buckingham, Campbell, Charlotte, Dinwiddie, Franklin, Halifax, Mecklenburg, Pittsylvania and Prince Edward counties. The plan is to visit each of these farms several times each year and eventually get the whole farm terraced according to approved specifications.

State 4-H Club Short Course:

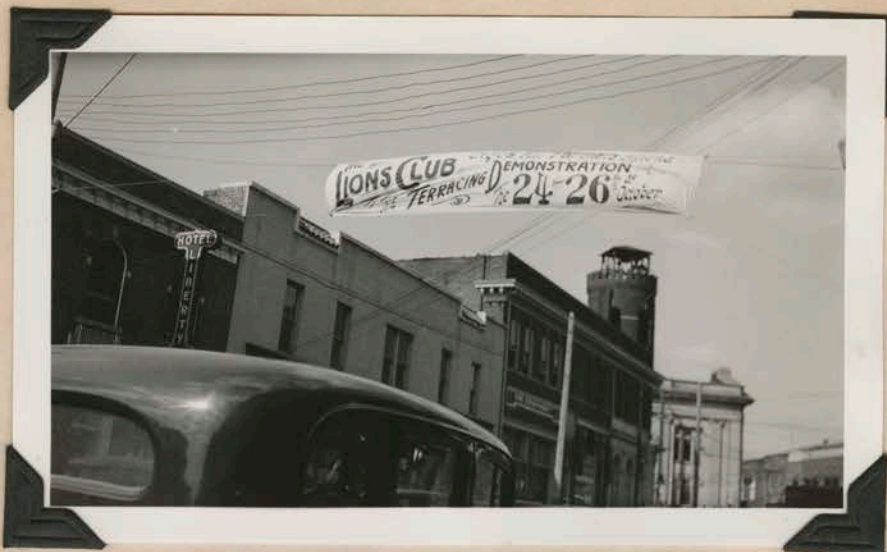
Plane table work similar to that given at the Hampden-Sydney short course was given to the boys of the State 4-H Club short course taking agricultural engineering. They were much interested and should be a great help to county agents, supervisors and others in measuring production controlled commodities during the coming years.

Large Scale Terracing Plan:

Since the middle of August the specialist has spent the greater part of his time getting Nottoway, Campbell and Halifax counties organized for doing terracing on a large scale, in arranging meetings and demonstrations and in giving publicity to this work.

Efforts were made to get a large terracing unit in each of these counties. A unit consists of a 40 horsepower Diesel tractor and a terracer costing \$4200.00. The start was made with Nottoway county because of the interest of the county agent. Two demonstrations were held and six other farmers each hired a day's work done. An organization was set up and work

Announcing  
terracing  
demonstration  
in Halifax  
county



Explaining starting  
of engine and  
its operation

Halifax county

Starting Terrace.  
Grade line plowed  
out.

Halifax county





Filling gullies. Halifax county.



Finishing terrace. Halifax county.

TERRACING PROJECT

## 3. Terracing Project

on acreage sign-up started. While considerable progress has been made it is felt that not enough has been obtained to make a favorable impression on the board of supervisors. The plan is to have the board of supervisors underwrite the purchase of this equipment. Then the dealer either sells or leases the outfit to the terracing club to do terracing for the farmers at cost. The money collected to go toward paying for the outfit. It is self-liquidating. It is best to have at least 2,000 acres signed up to be terraced before attempting to secure the equipment. During January more work will be done in the county with a view to starting a unit to work.

Demonstrations and meetings were held in various sections of Campbell county. About 1500 acres have been listed to be terraced. A final drive will be made in this county during January. We fully expect to establish a terracing outfit in each of these counties.

Halifax county has completed all requirements and has a terracing unit at work. About 6,000 acres were signed up. The county people are quite enthusiastic. Many farmers claim that terracing work done by this outfit is not only much better but is actually cheaper than they can do it with their own team and tools.

Outlook:

The future of the terracing project under the Extension Service is exceedingly bright. If efforts, now being exerted, are successful the establishment of terracing outfits in at least ten counties during 1935 seems assured. The specialist hopes to spend most of next year on this most important project.

#### 4. RURAL ELECTRIFICATION PROJECT

Contact has been maintained during the year with the rural service representatives of the Appalachian Electric Power Company and the Virginia Electric & Power Company. These men are doing a fine work in serving the farmers in their districts. They are rendering all forms of consulting engineering advice in addition to the purely electrical help they are giving.

The present National administration has recognized the great importance of rural electrification. It appears certain now that the coming year will see some governmental program of rural electrification that will greatly stimulate interest and development in this important field.

As noted under "Emergency Work" we carried on a rural electrification survey in about 50% of the counties of the state under C. W. A. We hope to complete this survey this winter so that all available information will be at hand on which to plan a sound program of rural electric development.

A number of conferences have been held by the specialist handling this project with E. V. A. officials, member of Federal Power Commission and the President's Power Policy Committee as well as representatives of private power companies.

##### Martin Rural Electrification Award:

That the electric power companies in Virginia are making progress in rural electrification is pretty definitely established with the award of the Martin Plaque to the Virginia Electric & Power Company. This is an award made each year to the company in the United States making the most outstanding progress in rural electrification. The V. E. P. company has cooperated closely with us and followed our recommendations for developing their rural electric service. All their rural service representatives are agricultural engineering graduates of V. P. I. (A brief article discussing this award is attached to the Exhibit Section of this report).

##### Rural Service Activities of Power Companies:

The following brief reports from several of the rural service men will indicate the type of work they are doing and the results being accomplished.

APPALACHIAN ELECTRIC POWER COMPANY

129 East Campbell Avenue  
Post-Office Box 2021  
Roanoke, Va.

November 23, 1934

Prof. Chas. E. Seitz, Head  
Agricultural Engineering Department  
Virginia Polytechnic Institute  
Blacksburg, Virginia

Dear Prof. Seitz:

In response to your letter of November 15, we are glad to send you enclosed herewith a brief report of the Rural Line Development Activities in the Roanoke District of the Appalachian Electric Power Company, which you wish to use in connection with your annual report for the year beginning December 1, 1933 to November 30, 1934.

The attached report on Rural Line Development gives a comparison of figures for the years 1932, 1933 and 1934. It is of interest to note the large increase in the number of miles of new rural distribution lines constructed and number of customers added in 1934 over the two previous years. We have, for a number of years, devoted considerable attention to the reduction in the cost per mile of new rural lines constructed which have been designed dependable and adequate to carry the rural load.

Extension representatives of the State Agricultural Engineering Extension Service have cooperated with the company's Rural Service Departments in working out rural electrification problems, supplied engineering consultation on electrical installations, and are working on projects which demonstrate practical and educational information for farmers in the territory served. It is our purpose to make available to the farmer as rapidly as possible information on the latest practical uses of electricity in agriculture and to promote a fuller use of the existing electrical farm applications.

As an incentive for the customer to make additional use of his electric service, the Appalachian Electric Power Company has made a rate reduction available for all farm, rural and city residential power and lighting customers effective October 1, 1934. The following article which appeared in the Roanoke Times on August 22, 1934 explains in detail the provisions of the rate reduction:

"APPALACHIAN WILL CUT POWER RATE TO SMALL CONSUMERS"

Novel Plan is to be Followed  
Reduction to be Progressive from October 1  
Ultimately will be 15 per cent  
Action is Voluntary

"Follows Negotiations with Corporation  
Commission after Saville Reports"

Richmond, Aug. 21 (AP) - A reduction in the light and power rates to its residential users in Virginia, amounting to about \$186,800 a year, or about 15 per cent of the total now paid by these consumers, has been granted by the Appalachian Electric and Power Company, it was announced today.

The first decrease in charges will become effective October 1, amounting to about \$80,000, and affecting about 10,000 consumers.

The announcement was made today by the State Corporation Commission following its release of the Allen J. Saville report, which showed that the earnings of the company in 1933, on the valuation of its properties for rate-making purposes, was approximately 5 per cent.

Plan is Novel

The reduction plan, effective on November 1 to 24,000 consumers, and on December 1 to all 38,000, was described by the commission as a novel one. It was announced, the rate making body said, after several months of negotiations.

On December 1, under the plan, all of the 38,000 light users began to participate in a service charge reduction of 1 cent per month over a period of 15 months.

If this experimental rate structure proves successful, officials of the company said, further reductions will be considered. It is their hope that the voluntary reduction will result in an increased use of power on the part of present consumers in a vast section of Southwest Virginia, thus justifying the company's action.

Officials expressed the belief that other light and power companies in the State would watch with interest the operation of the reduction plan and might be influenced by it in their own rate-making activities.

Commission Explains

The Corporation Commission's statement follows:

'The Corporation Commission of Virginia, although it did not until yesterday release the Saville report on the Appalachian Electric Power Company, has been for several months carrying on negotiations with the company for a unified and reduced rate. The highest rate of return as shown on the Saville report for 1932 on the prices prevailing in 1933, was 5.21 per cent. The company's figures for this period gave a rate of return lower than this. Since the Saville report was completed, increases in costs, due to various conditions, and new taxes imposed, have tended to further reduce this rate of return.

'The Appalachian Electric Power Company, has, however, after numerous conferences, submitted to the commission a new setup of residential rates.

'Yesterday N. M. Argabrite and J. W. Hancock, representing the company, were in conference with the commission, and their plan is to abandon the five different schedules of rates now applicable to residential users and to substitute therefor one uniform rate. They have submitted a novel plan for the reduction of rates.

'The 38,000 residential customers of this company in Virginia will be affected as follows by this reduction:

'The first month 10,000 will get a reduction.

'The second month an additional 14,000 will get a reduction which second reduction will also apply to the first 10,000.

'Beginning the third month and ending the 17th month the remaining 14,000 will get a reduction which further reduction will also apply to the other 24,000 customers.

'The details of the program of reduction are as follows:

'October 1, 1934 - 1st. To open tariff DS to all residential users regardless of appliance users. This will cost per year \$80,000.

'November 1, 1934 - 2nd. Reduce service charge in DS tariff from 50 cents per month to 40 cents per month. This will cost per year \$38,400.

'December 1, 1934 - 3rd. Reduce service charge 1 cent each month for 15 months, viz., December 1, 1934 charge 39 cents, January 1, 1934, 38 cents, etc. Finally getting down to 25 cents. This will cost per year \$68,400.

'Total reduction, approximately 15 per cent, \$186,800.

'When this rate schedule is in complete operation at the end of 17 months from October 1, the rates in the area served by this company will compare very favorably with the new approved TVA rates, known as schedule G1. In other words, Appalachian Company consumers using 20 KW hours will pay \$1.45 per month--20 KW hours on TVA will pay \$1.30 per month, 30 KWH, A. E. P. Co., \$1.95 per month, TVA, \$1.87 per month; 40 KWH, A. E. P. Co. \$2.35 per month, TVA \$2.37 per month; 50 KWH, A. E. P. Co., \$2.75 per month, TVA, \$2.67 per month; 75 KWH, A. E. P. Co., \$3.75 per month, TVA, \$3.82 per month.

'These figures include about 80 to 85 per cent of the domestic consumers of the Appalachian Electric Power Company. These rates are the lowest rates in Virginia taken as a whole, and with very few exceptions lower than any of the 115 cities studied by the Saville engineers.



#### Expect More Current

'The company is undertaking this reduction as an experiment if there is no increase in use due to these reductions, then the rate of return will be seriously impaired, but it is the belief of both the commission and the company officials that the customers of this company will use more current due to these lower prices. The commission has been assured by the company that if this experimental rate structure proves successful, further reductions will be considered.

'By spreading this reduced rate over a period of 17 months, it does not seriously affect the gross income of the company, and gives them a chance to build up the use of current during this period of reduction while at the same time it gives a substantial reduction to the customers.'"

The above rate applies to all farm customers and combines four old rate schedules into one sliding scale rate for the use of all single-phase service, including lighting, heating equipment and single-phase motors. A provision is incorporated in the rate for heating water with an approved type automatic water heater at 1 cent per kilowatt-hour.

Our experience clearly demonstrates the necessity of a full and complete explanation of rural electrification problems to prospective customers in order that they may fully understand the many economic and service problems involved.

We continue to hold community group meetings with farm and rural people and explain our plans for extending electric service and to offer free advice on wiring, use of equipment, cost of operation, installation problems, or to cooperate with county or extension agents on their projects relating to electric service.

Sales promotional activities are conducted on an educational basis in cooperation with dealers supplying the farm market. The magazine "Electricity on the Farm" is sent monthly to farm customers.

The continued work of our rural extension department on the preparation of large scale maps of all rural roads in the seven counties of the Roanoke District materially reduce the time required to present information to prospective customers on new line extensions.

The attached sheet gives a summary of rural line development in the Roanoke District for the past three years ending December 1, 1934.

We appreciate your cooperation in rural electrification development work during the past year, and hope this report will give you the desired information.

Very truly yours,

(Signed) R. B. Choate  
Rural Service Engineer

APPALACHIAN ELECTRIC POWER COMPANY  
ROANOKE DISTRICT

Data on Rural Line Development as of December 1, 1934

	1932	1933	1934
Number of miles of rural pole line	276	269	326
Number of miles of rural pole line built during the year	10	13	37
Average number of customers per mile of new line	6	7	6.9
Number of rural customers added during the year	173	188	297
Number of farm customers added during the year	59	51	99
Total number of farm customers served	480	531	650
Total number of rural customers served	3645	3833	4150
Average annual kilowatt-hour consumption per farm customer	1304	1276	1280
Average rate per kilowatt-hour for all farm service	\$ 0.041	\$ 0.040	\$ 0.040
Number of farmers contacted or assisted on electrical problems	863	737	597
Number of prospective farm customers visited	142	109	307
Calls on electrical dealers or manufacturers merchandising equipment	199	175	186
Average cost per mile of new rural line built	\$1150.00	\$1350.00*	\$1146.00
Approximate total amount spent on new rural line construction	\$14,829.00	\$17,550.00	\$42,476.00

\* The higher average cost per mile of rural line for the year 1933 over 1932 and 1934 is explained by the fact that 6 miles of three-phase line was built in 1933, whereas in 1932 and 1934 practically all extensions made were of single-phase construction.

APPALACHIAN ELECTRIC POWER COMPANY  
523 Main Street  
Lynchburg, Virginia

November 23, 1934

Prof. Chas. E. Seitz, Head  
Agricultural Engineering Dept.  
V. P. I.  
Blacksburg, Va.

Dear Prof. Seitz:

In reply to your letter requesting information on the development of rural electrification from December 1, 1933 to November 30, 1934, I am sending the following data:

No. miles of rural line built during year ----	10.4
No. rural customers added during year -----	100
No. farm customers added during year -----	36
No. farm and rural customers contacted or assisted during year -----	1069

I have had no outstanding installations in electrical equipment to report this year. However, I have several very good prospects for such development during the coming year.

I trust that this information will be in accordance with your request.

Very truly yours,

(Signed) L. M. McGhee  
Rural Electrical Engineer

LLM/B

VIRGINIA ELECTRIC AND POWER COMPANY

Norfolk, Virginia  
November 30, 1934

Mr. Chas. E. Seitz  
Agricultural Engineering Dept.  
Virginia Polytechnic Institute  
Blacksburg, Va.

Dear Mr. Seitz:

In compliance with your request I am sending you a brief report of the year's progress in rural electrification in the Norfolk--Portsmouth area.

No. miles of line built during the year -----	6
No. farm customers added during the year -----	45
No. farmers contacted or assisted during the year -----	479
No. new rural customers added to lines during the year -----	96

Work with the Dairy Farmers

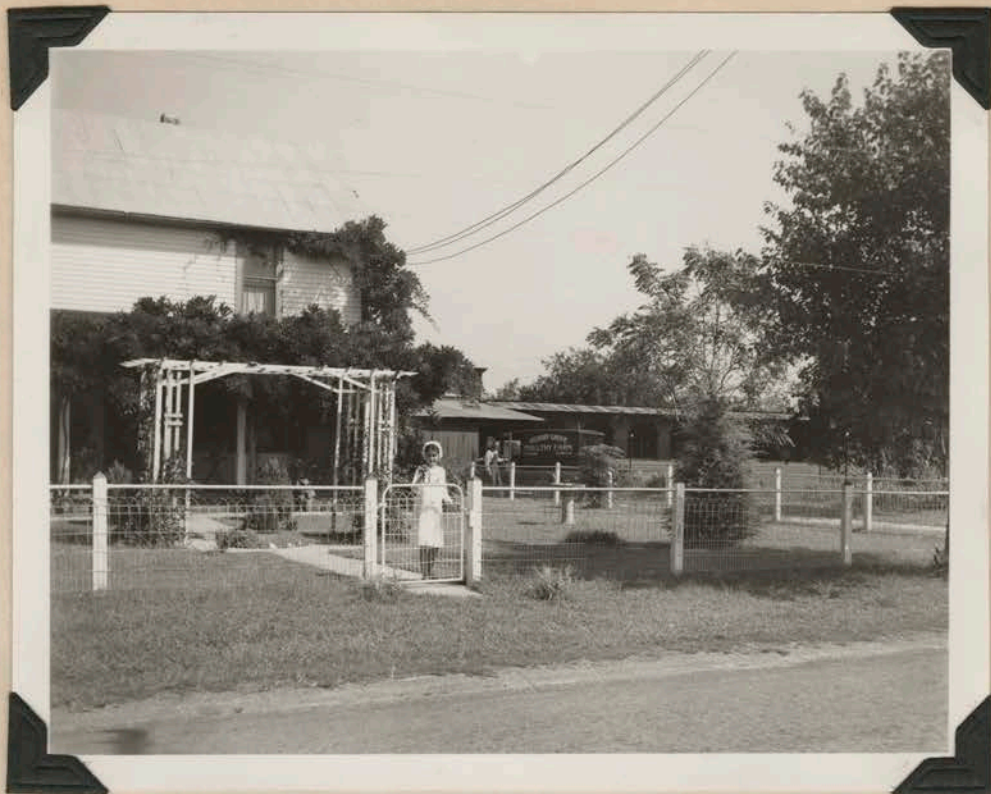
We assisted seven of our dairy customers with their refrigeration problems. Three of these customers were small dairy-men and were installing their first electric refrigerators.

Mr. Carter of Broad Creek installed a 1 horsepower compressor and a five by six cold room to take care of the milk he retails in Norfolk.

Mr. Robinson and Mr. Dennis of Portsmouth each installed 1/2 horsepower refrigerators of the wet box type to care for their milk.

Mr. Malmgren reopened his dairy at Hickory.

Mr. S. E. Charlton of Hickory, Mr. Gutherie of Davis' Corner, and the Yoders Dairies of Kempsville were each assisted in enlarging their dairy refrigeration. Each of these dairies had out-grown their first installation of electric refrigeration.



Front view of Hickory Grove Poultry Farm, Pentress, Virginia.  
Mr. S. H. Brunk, Proprietor.



Interior of Mr. S. H. Brunk's kitchen, showing electric  
range, sink and electric mixer.

#### Electric Hotbeds Compared with Manure Hotbeds

The Diamond Springs Experiment Station operated their electric and manure hotbeds again this year. These beds were similar and planted with the same seeds. The manure bed got chilled both years and was a failure. Practically no seeds germinated either year in the manure bed. The electric bed had fair germination of seeds and good sturdy growth of plants.

#### Electrically Grown Cabbage Plants

After the hard freeze last winter which killed practically all the winter cabbage, Mr. Parker of Diamond Springs Experiment Station decided to rush some early spring plants. He started these plants in the greenhouse and then set them in cold frames about three inches apart. In part of this cold frame electric cable was used to further rush the plants.

One 120 foot length of cable was doubled and placed in a bed which consisted of 9 sash. The doubled cable was supported just above the soil by driving several nails into the board on the side of the bed which held the cable about an inch from the top of the soil. The other 120 foot length was doubled on the north side of the bed and a single strand on the south side and placed in 13 sash just like the above. In other words we distributed 800 watts of heat in the first bed over 9 sash and in the second 800 watts of heat was distributed over 13 sash. Several sash were planted without any heat.

In about three weeks time the cabbage in the heated beds were more than double the size of those in the unheated beds and were much sturdier plants.

#### Irrigation

Mr. R. O. Parkerson of Portsmouth installed a  $7\frac{1}{2}$  horsepower motor and irrigation pump on his truck farm.

The Green Brier Farms installed a five horse power motor for irrigation on their nursery farm.

#### Work with the Poultrymen

We worked with Mr. Ackiss of Bay, Virginia, in fully electrifying his 16,000 egg incubator and installing a five hundred chick electric brooder.



A corner in Mr. S. H. Brunk's basement, showing electric churn, (homemade electric drive) electric water heater, and electric water pump.



Shelf in Mr. S. H. Brunk's basement showing canned goods. Canned with an electric range.

We told Mr. Brunk of Fentress, Virginia, about the electric brooder and how to wire for using electric brooders on his farm. Mr. Brunk used one of these brooders last summer and liked it so well he is using three of them this fall and winter. Mr. Brunk plans to purchase 10 more of these brooders and do all of his spring brooding electrically.

Very truly yours,

(Signed) Geo. N. Harper  
Agricultural Engineer

GNE/a



In the foreground, heating cable installed in cold frame to rush spring cabbage. In the background electric hotbeds and meter installation.

Location: Diamond Springs Experiment Station



VIRGINIA ELECTRIC AND POWER COMPANY

Suffolk, Virginia  
November 22, 1934

Mr. Chas. E. Seitz  
V. P. I. Extension Division  
Blacksburg, Va.

Dear Mr. Seitz:

I am submitting to you the following information on our rural activities in the Suffolk District for the year of 1934 as you requested. This data covers the period of December 1, 1933 to November 30, 1934, the figures for November 1934 being necessarily partly estimated.

	<u>1933</u>	<u>1934</u>	<u>Net Increase</u>
Miles rural line .....	200.3	204.15	3.85
Total farm customers .....	310	318	8
Total rural customers .....	1642	1659	17
Total farm customer contacts .	432	487	55
Total farmer contacts* .....	477	540	63

\*These figures include contacts with farmers who do not have electric service but who were assisted with some problem, or were called on relative to obtaining electric service.

Very little rural line construction was done this year as indicated above. Three comparatively large dairies were given service, one by private line and the other two by Form C. extensions.

No outstanding or unusual electrical installations have been made of any consequence, although there has been considerable equipment added to our rural lines. There were two small electric incubators installed and operated on farms this year that we paid particular attention to and their satisfactory and economical operations are noteworthy. Actual checks showed that incubators of this type will pay for themselves in about two hatches compared with the cost of buying chicks in small quantities from hatcheries. Although this is not a poultry section, this fact should be of interest and value to small poultry raisers and general farmers who grow some poultry each year.

Work Accomplished in Plan (Con'd.)  
4. Rural Electrification Project

During the year, close contact has been maintained with agricultural instructors and county agents within the territory and this cooperation has been mutually beneficial on several occasions. Informative literature has been furnished these agents for their school libraries which literature included regular subscriptions to "Electricity on the Farm" magazine.

The furnishing of plans and suggestions for the construction and remodeling of farm buildings has been one of the biggest activities during the year other than furnishing information on various electrical equipment. Plans have been furnished 19 farmers for some kind of farm building and we were able to offer suggestions in many cases where no actual drawing was furnished. Practically all of these drawings were furnished by your department.

In general, it can be said that financial conditions among local farmers are some better than they were a year ago. The peanut and cotton crops this year are both short in yield in addition to the acreage reduction sponsored by the AAA. Market prices on both of these farm products are considerably higher and indicate that most farmers will come out a little above water this year. The average current consumption on farms shows a substantial increase over last year indicating that new equipment has been added and that equipment already installed was put to greater use.

Very truly yours,

(Signed) E. P. Swink  
Agricultural Engineer

S:D

VIRGINIA ELECTRIC AND POWER COMPANY

Richmond, Virginia  
November 22, 1934

Mr. C. E. Seitz, Head  
Agricultural Engineering Dept.  
V. P. I.  
Blacksburg, Va.

Dear Sir:

I am sending the data you requested for your annual report.

Total calls per year . . . . .	1,124
Farm service customers called upon . . . . .	864
Prospective customers visited . . . . .	87
Jobbers contacted . . . . .	60
County Agents visited . . . . .	8
Agricultural teachers contacted . . . . .	6
Outstanding equipment added;	
4 - 10 HP motors and 2 - 25 HP motors	
5 - Milk coolers.	
4 - Battery type brooders.	
2 - Novel type brooders.	
1 - All electric incubator.	
3 - Electrically heated hotbeds.	
Agricultural engineering meetings . . . . .	6
Rural electrification exhibits;	
January 27 - Booth at John Marshall Hotel, Dairymen's Convention.	
September 11 - 14 - Booth at Fredericksburg Fair	
October 1 - 6 - Booth State Fair in Richmond.	
October 8 - 13 - Booth at Petersburg Fair.	
Farm customers added in Richmond district. . . . .	75
Farm customers added in total system. . . . .	123
Rural customers added in Richmond district. . . . .	450
Rural customers added in total system. . . . .	736
No. miles rural line built in Richmond district. . . . .	12
No. miles rural line built in total system. . . . .	26
1 - Substantial rate reduction, effective . . . . .	

January 16, 1934.

Won Martin Award

I do not have the

Very truly yours,

(Signed) J. S. Hamilton  
Agricultural Engineer

JSH/6'

FARM WATER POWER:

While the requests for help on farm water power projects have not been numerous enough to make this a major piece of work, it is, and likely will continue to be, sufficiently important to justify a good portion of the specialist's time. A small number of requests are received each year but each job requires considerable outlay. Detailed surveys are made on the site, approximate estimates on costs are given and practical suggestions made. The service is greatly appreciated.

Virginia offers many fine locations for real practical installations. However, it is not the policy of the department to recommend installations of this kind where service from central station lines is available at reasonable rates. The amount of power from these plants is usually limited and farmers know very little about electricity. It will be a long time before all the good sites are developed. Therefore, it is expected that requests for assistance will continue to come in.

Results:

Twenty-six (26) requests from 16 different counties for help with farm water power jobs were received. In some cases sufficient water or head was not available, the transmission line would be too long, or the installation would otherwise be impractical. In such cases the recommendation would be to spend no money. Patrick county sent in the largest number of requests (5), with Grayson county in second place with 4 requests. The other counties were Franklin, Scott, Alleghany, Bland, Fairfax, Southampton, Lunenburg, Pittsylvania, Wythe and Bedford.

The Nimrod Hall job in Bath county (completed last year) is giving excellent service. It was a choice of renewing the gasoline engine plant or making the water power installation. The initial cost was a little more but since there is almost no operating costs and very little depreciation the wisdom in deciding on the water power plant is more apparent each year. The Dickenson job in Grayson county (reported last year) is undergoing a change. The wooden dam is being replaced by a concrete dam. This is one of the finest developments of its kind in Virginia. The distribution line is  $3\frac{1}{2}$  miles. The 16'x5' steel wheel is enclosed in a concrete pit.

The Dalton Water Power Project:

The Dalton development in Patrick county promises to be one of the best projects of this kind in the state. Over 400 cu. ft. of water a minute is available and from 35 to 40' of head can be obtained within a reasonable distance. The head race will not be difficult to build.



Farm line construction.  
Water power plant.

Grayson county

Turbine job in  
Patrick county.



An overshot water wheel 36' diameter and 42" face has been located for \$250.00. It is a used wheel but is in fair condition. It cost over \$2,000.00 new. The power will be used to light the village of Meadows of Dan. Mr. Dalton is a good mechanic and is doing most of the work himself. The people of Meadows of Dan are much interested and expect to help finance the project. Mr. Dalton has a farm and power can be used to irrigate his truck garden and farm crops.

Outlook:

With the great emphasis being placed on rural electrification by the Present Administration it appears that the coming year will see some outstanding progress in this field. The outlook looks exceedingly bright for the extending of electric service to many of the farms of our state. This project will be stressed this coming year.



Overshot wheel job. Franklin county.



OTHER WORK ACCOMPLISHEDEMERGENCY WORKSoil Erosion Area (P. W. A.) (S. E. S.):

Professor Seitz prepared plans for an extension soil erosion control Public Works project and the Extension Division made application last year to the Public Works Board for a grant of approximately \$400,000 with which to carry on terracing work in some 30 counties of the state. This application was referred to the newly created Soil Erosion Service of the U. S. Department of Interior, an emergency public works bureau. This bureau disapproved the application and urged the Extension Division to establish an erosion control demonstration area according to plans worked out by the Soil Erosion Service. While it was felt and still is that the original program was the most desirable and would aid more farmers in the state, the area proposal was accepted and some \$500,000 was assigned the state for the development of an erosion control area which is planned to serve as a demonstration of all known methods of erosion control.

At the request of the Soil Erosion Service Professors Seitz and T. B. Hutcheson investigated a number of water-sheds in the state and the Bannister river watershed in Pittsylvania county, consisting of some 150,000 acres was selected by the government for the Soil Erosion Demonstration Area. Professor Seitz spent considerable time in assisting with the organization of this project and the selection of the technical personnel for this work. He is serving on the advisory council for this project.

The National program for soil erosion control, as stated by H. H. Bennett, Director of the Soil Erosion Service, calls for "control of erosion, reduction of the flood hazard, protection of river bottom lands from excess deposits of worthless sand and gravel washed out of the hills, prevention of silting of stream channels and reservoirs, and affecting all necessary readjustment in land-use practises to fit the requirements of an economically sound farm enterprise".

A permanent technical staff of some 20 agricultural engineers, agronomists, soils and soil erosion specialists and foresters, together with a large number of temporary employees, has been at work for several months on this project. The agricultural engineering department of the project up to December 31, 1934, had constructed 160 miles of terraces on 83 farms, benefitting 1550 acres of farm land. Over 4,000 check dams have been built to fill gullies and control terrace outlets. Additional terracing equipment has been secured so much more rapid progress in terracing will be made from now on. The engineering department has made outline maps of 566 farms, detail maps showing the farming plan to be followed on 233 farms, and various road and stream maps used to expedite the work of the soils men, engineers, agronomists and foresters. There has also been completed a working map of the entire area showing roads, streams and each individual farm.



A C. C. C. camp with an enrolled strength of 210 men is also assisting with this project. The superintendent engineer and six of the seven foremen are agricultural engineers. The men in this camp have cleared out a considerable section of the streams. They are now working entirely on erosion control by constructing terrace outlets and diversion ditches and soil saving dams for gullies.

Rural Housing Survey (G. W. A.):

Professor Seitz was called to Washington early in December of 1935 to assist representatives of several other states and of the U. S. Department of Agriculture in working out plans for a National Rural Housing Survey to be conducted as a G. W. A. project in all the states.

The survey was made in ten counties. One hundred and forty-four (144) women and ten agricultural engineers were employed for several months on this project on Civil Works funds.

Professors P. B. Potter, H. H. Gordon and C. E. Seitz devoted considerable time to training the engineers and supervising the actual work of the survey. Professor Potter devoted at least six weeks to assisting with this work. At the request of the Department of Agriculture Professor Seitz advised with the University of Tennessee on the organization of this project. (A brief summary of the results of this survey as conducted in Virginia is attached to the appendix section of this report).

As part of this project five architects and draftsmen were employed by the agricultural engineering department at V. P. I. for fourteen weeks to develop plans for farm houses which might be built for from \$1,000 to \$5,000. Several such plans were developed so that a house of two or three rooms could be built and additional rooms added as the needs of the family increased. These plans were prepared for combined economy, convenience and architectural beauty and are available free of charge upon request to the agricultural engineering department of V. P. I. (Samples of these plans are attached in the appendix section of this report).

Farmers' Bulletin No. 1738 entitled "Farm House Plans" published in October, 1934, contains 40 plans selected from over 100 plans that were prepared by the Bureau of Agricultural Engineering of the U. S. D. A. and the agricultural engineering departments of sixteen state colleges. Three of the seven plans prepared at V. P. I. are shown in this bulletin, which is now generally available to the farmers of the nation.

National Survey of Rural Electrification (C. W. A.):

This survey was undertaken as a supplement to the C. W. A. Farm Housing Survey. The plans for the survey and data to be obtained were decided on jointly by representatives of the Bureau of Home Economics and Agricultural Engineering of the U. S. D. A., Dr. F. S. Warner, Head, Division of Research of the National Power Survey and Chas. E. Seitz of the Virginia Polytechnic Institute.

The purposes of this survey, other than to give employment, were to obtain information supplemental to data from the Housing Survey, Census, and other sources, relative to the present availability of electric service to farmers, its use and the possibilities of extending service to additional farms.

A 68 page mimeographed report has been published containing the information gathered in this survey. Six agricultural engineers were employed about six weeks on this survey in Virginia. Forty-two of the 100 counties were surveyed and county maps prepared showing the location of all transmission lines and rural distribution lines. Miles of rural lines, number of rural and farm customers, average number of customers per mile, and average k. w. h. consumption per farm per year were secured for each of the counties surveyed.

Professors P. B. Potter and C. E. Seitz devoted considerable time to this survey. The survey was terminated after 42 counties were completed due to lack of funds. Application is now on file with V. E. R. A. for funds to complete this survey for the entire state. Such information will be invaluable in working out a sound program of rural electric development.

Development of Low Cost Electric Cooking Stoves (C.W.A.) (T.V.A.):

This study was undertaken as a supplement to the Rural Housing Survey at the request of the U. S. Bureau of Home Economics. Two research agricultural engineers were supplied by the Bureau under C. W. A. funds, and they worked seven weeks under the direction of Professor Potter. Material was supplied by the Agricultural Experiment Station.

This project had only time enough to get started but in that time some designs of hot plates and complete stoves with home assembled electric units were constructed. While several faults in the first design must be corrected the results obtained show considerable possibilities. From results secured so far it seems possible to assemble electric stoves that are serviceable and satisfactory at a considerably lower figure than the cost of standard manufactured products.

Low cost electric equipment is most essential to the success of any rural electrification project. The President's Power Policy Committee has shown an interest in this study. The Tennessee Valley Authority has employed one of the agricultural engineers, Mr. Max Beane, who was working on this project under C. W. A. Mr. Beane was assigned to this department November 5, 1934 by the T. V. A. to continue these electric stove studies. It is hoped that in about six months definite progress can be shown and some designs developed for general use.

Agricultural Engineering Research (T. V. A.):

A report was made by the various members of the department staff covering research in agricultural engineering at V. P. I., together with proposed projects that might be of value to the Tennessee Valley and adjacent territory. This report deals with projects in Rural Electrification, Household Engineering, Farm Structures, Land Reclamation and Farm Power and Machinery.

Agricultural and Industrial Survey (T. V. A.):

During the winter of 1933 and 1934 the T. V. A. requested Professor Seitz to cooperate with the Authority in making an agricultural and industrial survey of the Southwest Virginia counties in the Tennessee Valley watershed. Nine field engineers and agriculturists and one office engineer were employed on C. W. A. funds for a period of 12 weeks to make these field surveys and tabulate data. The information collected is now in the process of being published by the T. V. A.

Contact Work (T. V. A.):

The Tennessee Valley Authority requested that each Land Grant College in the states of the Tennessee Valley appoint a contact man to represent the state in all agricultural planning activities, this man to be a joint representative of the extension service and experiment stations to help correlate the work of T. V. A. and the research and extension work of the college. Professor Seitz has been serving as contact man for V. P. I. and as such has attended a number of meetings, held conferences with T. V. A. officials, helped work out plans for erosion control, etc., and visited much of the development work going on in the Tennessee Valley.

Soil Erosion Control (T. V. A.):

As contact man for T. V. A. Professor Seitz served on a committee consisting of a representative from Alabama and North Carolina, and one from T. V. A. This committee prepared a plan of

cooperation between the Land Grant Colleges of the Tennessee Valley states, the T. V. A. and the U. S. D. A. This committee also prepared a definite erosion control project, "the purpose of which is to bring about the adoption of farm practices, both vegetative and mechanical, which have been proven practical in reducing losses resulting from erosion, and to conduct investigations to discover and develop additional methods of erosion control adapted to conditions in the Valley".

The project, as now underway, is based on a terracing program whereby terracing equipment is purchased by the county or terracing clubs. The farmer pays the actual cost of using this equipment on terracing work while the T. V. A. pays the salary of the agricultural engineer, who is employed as an assistant to the county agent and in direct charge of the terracing program. This project is making rapid progress. A number of counties in Alabama, Georgia and Tennessee are already organized and working on this program. (Copy of the project statement is attached to the exhibit section of this report).

Farm Conservation Project (T. V. A.):

As contact man for T. V. A. Professor Seitz has outlined a cooperative project for Russell county, Virginia, whereby the T. V. A. will employ an assistant to the county agent and supply the materials called for in the cropping and pasture plans on some twenty selected farms that will be used for study and demonstration of all practical measures for the control of soil erosion and readjustment of farm practices. (A copy of this project statement is attached to the exhibit section of this report).

This project will be used as a model for the organization of similar projects in all the counties in the Tennessee Valley, some 75 in number. Plans are now being developed for the expansion of this project. Professor T. B. Hutchason of the Agronomy Department will devote half of his time to the T. V. A. in the promotion of this project.

Compliance Work (A. A. A.):

The agricultural engineering department was called on to train field supervisors in the various counties in proper methods of measuring land for the crop reduction campaign. Professor Gordon devoted two months to this work and trained over 300 men for the survey work. In addition he personally measured wheat acreage on some 25 farms in nine counties and check-ups made on tobacco acreage where there were disputes. Professor Waller had the plane tables made for measuring. He assisted with the training of men and did check-up work on wheat and tobacco in some 35 counties. He spent several weeks on this work.



Using plane table  
to measure wheat  
in Essex county.



EMERGENCY WORK

Rural Electrification Report (F. P. C.) and P. P. P. Com.):

A report on rural electrification for the State of Virginia was prepared by Professors Hillman and Seitz to the Federal Power Commission for the National Power Survey. A report on rural electrification was also made for the President's Power Policy Committee.

Virginia State Planning Board (P. W. A.):

Governor John Garland Pollard, on September 2, 1933, appointed a State Planning Board of which Chas. E. Seitz, was one of the seven original appointees. The last session of the general assembly of Virginia authorized Governor Peery to continue the State Planning Board, with the right to change the membership thereof at pleasure in order to cooperate in aiding to effectuate Virginia's cooperation with the purposes of the National Planning Board.

This board has acted in an advisory capacity to the State Public Works Administration. It has made detailed studies and is preparing a comprehensive program of public works, which shall include among other things construction, repair and improvement of public highways and parkways, public buildings and any publicly owned instrumentalities and facilities and development of natural resources including control, utilization and purification of waters, prevention of soil or coastal erosion, development of water improvement, transmission of electrical energy, construction of river and harbor improvements and flood control and drainage improvements.

The primary work of the Board is being done or has been done by nineteen committees. Professor Seitz has served as chairman of Committee No. 10 - Soil Types. A progress report published September, 1934, details the accomplishments of the State Planning Board.

Residential Electric Appliances Survey (F.P.C.) and (F.E.H.A.):

A survey of the Town of Blacksburg to ascertain the electric appliances in use, connected loads, kilowatt hours used, and monthly bills for residential and domestic consumers of electricity was begun the last of December as an investigation for the electric rate survey of the Federal Power Commission. This survey is being made under the supervision of Professors Seitz and Hillman with several students of V. P. I. employed on F. E. H. A. funds making the actual house-to-house study. Mr. Minter of the Electric Service Department of the college is cooperating with this survey.

County Terracing Project (F. E. E. A.):

Professor Seitz has held conferences with representatives of the F. E. R. A. and the V. E. R. A. for the purpose of initiating a county terracing program. This project has been started in Halifax county with the employment of an agricultural engineer and the purchase of terracing equipment. This program will be organized in at least nine other counties during the winter and conducted as a part of the Rural Rehabilitation Project of the Emergency Relief Administration and as a part of the established soil and moisture conservation and soil building programs of the U. S. D. A. and the State Agricultural College.

The required personnel will be furnished by the E. R. A. and the technical direction and training of men will be under the extension agricultural engineer. Terracing equipment will be purchased by the county or advanced through the state rural rehabilitation corporation. Farmers will pay the actual charges for constructing terraces with the available equipment. (A copy of the suggested set-up for this program is attached to the exhibit section of this report).

Rural Rehabilitation (F. E. E. A.):

Professor Seitz has advised with F. E. E. A. officials in technical matters dealing with the rural rehabilitation program. Farm building plans have been furnished and Professor Hillman has collaborated with L. B. Dietrick, Vegetable Garden Specialist, in the preparation of a mimeographed pamphlet entitled, "Farm Storage for Fruits and Vegetables", which contains instructions for the construction of inexpensive storage facilities. Several thousand copies of this pamphlet have been distributed to the garden directors of the Emergency Relief Administration. (Copy of pamphlet is attached to the exhibit section of this report). Professor Gordon, Assistant Agricultural Engineer of the Extension Division, has been granted a year's leave of absence to take charge of the Rural Rehabilitation Division of the F. E. E. A.

Education Committee of Blacksburg Community Federation (F. W. A.) and (C. W. A.):

Professor P. B. Potter as chairman of the Educational Committee of the Blacksburg Community Federation has given considerable of his time to school matters. He surveyed and designed the concrete drainage culvert which was constructed through the high school grounds as a C. W. A. project. He also prepared a detail map of the school grounds showing position of baseball and football fields and the necessary earth fills to make a satisfactory athletic field.

Professor Potter took an active lead in the matter of a new high school building which is now under construction as a F. W. A. project. He prepared sketches and plans to develop ideas for the architects,

surveyed the school grounds and staked off the building, held numerous conferences with the architects and school officials and visited a number of schools to study heating systems, etc.

Land Utilization Committee (A. A. A.):

Professor Seitz served on the Land Utilization Committee with Dr. Drinkard, Director of the Experiment Station, and Dr. Young, Head of the Agricultural Economics Department. This committee conferred with officials in Washington and has had several meetings to discuss plans and procedure of the program for retiring marginal land from cultivation. Two men have been employed in the state for several months making surveys and reports and a large area of land in Piedmont Virginia has been selected for purchase by the government. Close cooperation has been maintained with the Division of Program and Planning of the A. A. A. and the State Planning Board by the committee.

Rural Housing (F. H. A.):

V. E. Hillman, associate professor of agricultural engineering, has been loaned to the Federal Housing Administration for a three months period beginning January 1. Professor Hillman will work out of the Richmond office of F. H. A. and cover Virginia and Maryland, contacting farm organizations, material dealers, building interests, county agents, etc., with the object of promoting housing and related activities in the rural areas for the F. H. A.

Employment of Agricultural Engineers:

Many of the New Deal activities are closely related to agricultural engineering and have created a demand for trained agricultural engineers. Professor Seitz has been active in placing the agricultural engineering graduates of V. P. I. with the various government agencies.

There are some 98 V. P. I. agricultural engineering graduates. A check-up was made of all these men to determine their present employment and to find men who were interested in government work. A comparatively few agricultural engineers were unemployed when the survey was made. As far as can be determined all the agricultural engineering graduates are now employed. Ten recent agricultural engineering graduates were used on the Rural Housing and Rural Electrification Survey through C. E. A. Most of these men later went into the soil erosion control work. There are some 29 V. P. I. agricultural engineers now employed by the Soil Erosion Service of the U. S. Department of Interior on the Virginia, North Carolina, Georgia and West Virginia projects. Several graduates are employed with T. V. A. and several are on F. E. R. A. terracing projects. These agricultural engineers are making a real contribution to the government emergency program. The emergency has demonstrated anew that there is a real and important field of service for men with agricultural engineering training.



IRRIGATION:

The interest in irrigation throughout the state continues to grow, especially in that of irrigation of truck crops and orchards. The several orchard and truck crop irrigation installations that have been under study or demonstration for several years have been continued but due to the great demand put upon the staff by the emergency work little has been done on this project during the year. Seven irrigation surveys were made for truck crops of about 60 acres. A number of letters have been answered on this project and the following bulletins mailed out by request.

210 - "Surface Irrigation in the Eastern States"  
185 - "Spray Irrigation in the Eastern States"

Outlook:

The continued and growing interest in irrigation demands that we give attention to this subject. An attempt will be made this year to follow up the irrigation work more actively.

DRAINAGE:

The extremely wet season in the eastern part of the state considerably revived interest in land drainage as could be noticed by the increased number of requests received during the year for assistance and information on drainage. Due to the great demand for emergency work little actual field assistance was given on this project.

Seven drainage surveys of a total of about 175 acres were made. A number of applications are on file in the office for drainage surveys. The following bulletins have been sent on request:

112 - "Farm Drainage"  
47 - "Drain the Wet Land"

Outlook:

It will be necessary to give more attention to this project during the coming year. A number of surveys will probably be made during the winter. However, the importance of other projects and lack of personnel will prevent any great amount of work being done on this project during the coming year.

FARM HOME EQUIPMENT:

The increased emphasis being placed on improved standards of rural life has created demand for more attention on this project but due to lack of personnel no great attention to this project has been possible.

The rural service men of the power companies are doing a good work in this field.

Professor Potter of the Experiment Station and Resident Instruction Staff has given us help on this project by answering letters and preparing radio talks. The results of the experimental work he is doing are being sent out as fast as they are available.

The following bulletins have been sent out:

- 120 - "Convenient Kitchens"
- 110 - "Methods and Equipment for Home Laundering"
- 150 - "Farm Home Conveniences"
- 115 - "Operating a Home Heating Plant"
- 75 - "Floors and Floor Coverings"

#### Outlook:

This is a project worthy of the time of a full-time specialist. After all the ultimate objective of all extension work is a better rural life. This project should, therefore, receive the attention it deserves, but until adequate extension personnel is available we shall continue to do the best we can with existing facilities.

#### FARM WATER SUPPLY:

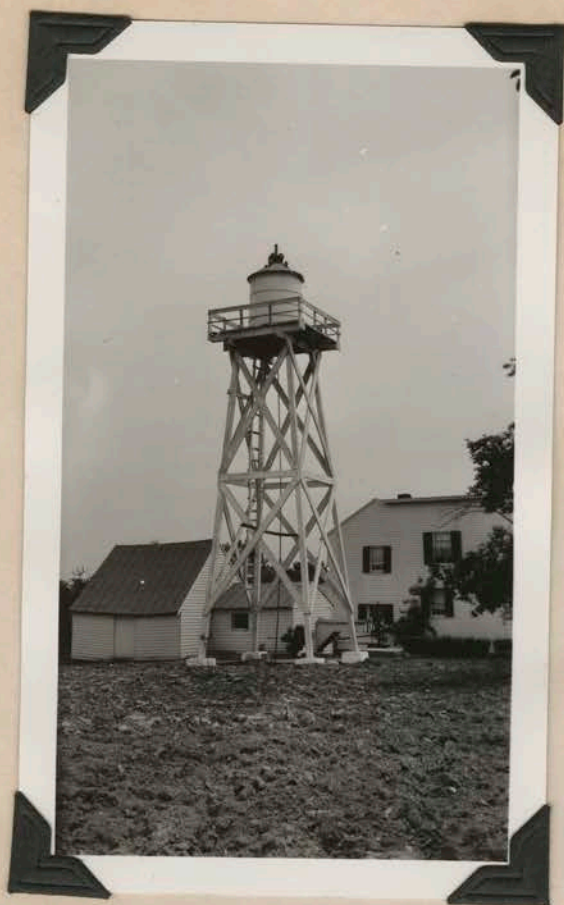
The requests for farm water surveys which have been received during the past year have been sent in by farmers without any sort of solicitation on the part of the county agent or the specialist. This service has not been advertised and no campaigns or drives have been conducted to suggest having the surveys made.

In most counties the agents are completely occupied with Federal Administrative duties, and in many instances do not drive the specialist to the farms where surveys have been requested. It has been almost necessary to use Extension or personal cars.

Although this project has not been stressed in spite of bad economic conditions which have existed, most of the year, a considerable number of requests have been taken care of. During the summer, about the time most work on this project is done, the specialist was called upon to devote at least a month of his time in instructing agents and farm supervisors concerning the measurement of wheat, tobacco and corn acreages.

#### Results:

Fifty-eight (58) farm water supply surveys were made in twenty-seven (27) different counties. The farmers asked for this help entirely



Well built homemade tower.  
Plenty of Height

Mecklenburg County



Hydraulic ram.  
Grayson County

FARM WATER SUPPLY PROJECT

voluntarily and for this reason it is believed that most of the recommendations will result in actual installations. This is the second year in seven years that no campaigns have been conducted. It is quite possible that these farm water supply campaigns, which were so popular, will be continued during 1936.

Hydraulic ram systems .....	28
Automatic electric systems .....	12
Gasoline engine pumping outfits .	16
Gravity systems .....	6
Windmill .....	1
Hand power system .....	1

Total ..... 58

Outlook:

Prospects seem bright for 1936. If time permits from erosion control work, campaigns will be put on in some sections of the state. The percentage of farm homes having running water is still under 10%. There is a big field of work to be done. The tobacco sections have money now. It so happens that water conveniences are very badly needed in these sections. The best year since the depression is in immediate prospect.



Reservoir (ram) doing excellent work. Grayson Co.

FARM OPERATING EQUIPMENT:

While this is an extremely important field of work we have been unable to stress this project due to limited personnel. Professor Sjogren of the resident instruction and research division has helped us with this project by answering letters, preparing radio talks and making a few field trips to aid county agents in soybean harvesters and lespedeza harvesting. Professor Sjogren made an extension trip to Amelia county to demonstrate proper methods of harvesting lespedeza seed.

The following bulletins were mailed out on this project:

- 85 - "Laying out Fields for Tractor Plowing"
- 50 - "Practical Hints on Running a Gas Engine"
- 125 - "Harvesting Hay with the Sweep Rake"
- 150 - "Haymaking"
- 135 - "Care and Repair of Farm Implements"
- 125 - "Labor Saving Practices in Hay Making"
- 100 - "The Gas Tractor in Eastern Farming"

Outlook:

This is an important phase of agricultural engineering extension that should be developed. There is a great and growing need for instructing the farmers of the state on more efficient equipment. Much of the farm equipment has been allowed to deteriorate. Considerable good could be accomplished by holding farm equipment schools to teach methods of repair of equipment, etc. Until additional help is secured we will be unable to do much along this line. However, we shall continue to give all the help we can with the limited personnel available.

MISCELLANEOUS ACTIVITIESCorrespondence:

During the year 3210 individual letters were written and 4822 circular letters sent out dealing with agricultural engineering problems. Ten articles were prepared for the newspapers.

Radio Talks:

The following radio talks were prepared and delivered by members of the staff:

- "Plans Being Prepared for New Farmhouses"
- "Why Have Clinics for Sewing Machines"
- "Efficient Fertilizer Distributors"
- "Household Measurements"
- "Burner Efficiency of Cooking Stoves"
- "Hot Water and Soft Water"
- "The Farm Equipment Hospital"
- "Terracing to Control Erosion"

Emergency Activities:

Much of the miscellaneous work done by members of the staff as relates to emergency activities is listed under "Emergency Work" in another section of this report.

Short Courses:

Fifty-five boys were given three days intensive instruction in agricultural engineering subjects during the annual 4-H club short course at V. P. I.

One hundred and twenty-five boys were instructed in terracing at short courses in Charlotte and Dinwiddie counties.

Twenty-five boys were given intensive instruction in plane table surveying at the Hampden-Sydney 4-H club short course.

Two sewing machine schools were given for about thirty women in Chesterfield county.

Meetings:

Some members of the staff attended the annual meeting of the A. S. A. E. at Detroit, Michigan.

Professor Seitz attended a soil erosion meeting at Athens, Alabama where the T. V. A. soil erosion program was inaugurated. He also attended the meeting of Directors of Extension and Research, contact men and T. V. A. officials held at Muscle Shoals, Alabama, to work out cooperative policies and programs for agricultural development work in the Tennessee Valley.

A large number of extension and farmers' meetings of various kinds were attended throughout the year in reference to extension and related projects.

Miscellaneous Work:

Surveys were made for three fish ponds for farmers. Two surveys were made for establishing of property lines for farmers. A survey was made for the State Epileptic colony. Town water surveys were made for the towns of Baywood, Barbooursville and Independence. Information and consulting advice was given to a large number of people who visited the office seeking help. Consulting advice was also given practically all the specialists of the Extension Division as well as members of the Research and Resident instruction departments of the college on engineering matters in relation to this work.

OUTLOOK:

Agricultural engineering is so broad and is so closely associated with practically every branch of agriculture that we are constantly aiding other departments and specialists. This type of consulting advice is constantly growing greater and takes a great deal of time. It is difficult to report such assistance but we feel that such aid to other departments is extremely valuable. We expect to continue to render such aid and encourage the consulting help.

With the tremendous demand being made upon us from all emergency agencies, departments and specialists, all members of the staff are working under great pressure. We expect the demands on us to grow rather than to slacken. We will do all we can to meet these demands and cooperate to the fullest possible extent with agencies. We are greatly in need of additional personnel to meet these demands being made upon us.

Respectfully submitted,

*Chas. E. Seitz*

Chas. E. Seitz,  
Extension Agricultural Engineer

EXHIBIT SECTION

Summary of Rural Housing Survey

Sample Plans of Rural Houses

Project Statement on Erosion Control - T. V. A.

Project Statement of Russell County - Farm Development Project

F. E. R. A. Terracing Project Outline

The Home-made Brick Brooder (Circular)

Farm Storage of Fruits and Vegetables - V. E. R. A. (Mimeographed  
Circular)

Terracing Letters Used in County Terracing Projects



## THE FARM HOUSING SURVEY OF VIRGINIA

[Editor's Note: Miss Maude E. Wallace, state home demonstration agent, calls the attention of all, and particularly the women of Virginia, to the following report which has been prepared by Mrs. Sarah Porter Ellis, who had charge of the Farm Housing Survey made in Virginia. Miss Wallace urges study of this report as a basis for a long-time program of work leading toward improvements in these lines.]

The farm housing survey was a federal C. W. A. project which was offered to each of the 48 states of the United States. It was conducted in 46 of the states and has just been completed in these states. This project was conducted by the federal C. W. A. under the supervision of the Bureau of Home Economics, cooperating with the Agricultural Extension Service, the Bureau of Agricultural Engineering and the office of the Secretary of Agriculture.

The aim of the project, as stated by these federal departments at the time the survey was launched, was as follows: "To measure the potential demand for improved home facilities, to determine cost of providing such facilities, to develop plans for installation of same with standard specifications adapted to needs of typical sections, and to develop plans for financing their provision, as a preliminary step in developing a public works program for improvement of the farm home and its equipment." Another aim was to give employment to women in need of same. It was to be primarily a women's project, but the services of one man, either an engineer, a contractor or an architect, was required in each county in which the survey was made.

Each state was authorized to make the survey in one-tenth of the counties of the state. These were to be chosen to be typical of various sections of the state—as to kinds of country, kinds of farming and kinds of living conditions. The counties were to be chosen by a state farm housing committee, and the work was to be done under the immediate direction of the state committee.

The state committee in Virginia was headed by Miss Maude E. Wallace, state home demonstration agent, with Miss Helen Ricks, district home demonstration agent as chairman of the committee, and P. B. Potter, of the agricultural engineering department, V. P. I., as vice-chairman. Other members of the state committee were Charles E. Seitz and Howard H. Gordon of the agricultural engineering department at V. P. I. All of these committee members gave untiringly of their time and efforts in promoting the survey. The extension agents in the counties having the survey cooperated to the fullest extent.

The counties chosen for this work in Virginia were, Amherst, Dinwiddie, Essex, Fauquier, Halifax, Louisa, Norfolk, Roanoke, Rockingham and Tazewell. A county chairman, in each case a woman who had had home economics training, was put in charge of the survey in each county with a vice-chairman, who was a graduate agricultural engineer. At least two office clerks were employed in each county, and women, as well qualified as could be found as to personality and experience, were employed as enumerators. These ranged in number from six in the smaller counties to nineteen in the larger counties. Mrs. Sarah Porter Ellis served as full-time state supervisor. This made a total force of 144 women and 10 men.

The survey was made through personal visits of the enumerators to the farm homes of the various counties. Homes of owners,

tenants, croppers, and wage-hands, white and non-white, were visited. The total number of homes so visited in the state was 22,974. Ten thousand, two hundred and five of these were white owners, 3,517 were non-white owners, 6,025 were white non-owners, and 3,227 were non-white non-owners. A definite schedule of points to be checked by the enumerator at each home visited was furnished by the federal department sponsoring the survey. These points included, among other things, the age of the house, its condition and needs as to foundation, roof, walls, etc., family space requirements, water supply, sanitary facilities and sewage disposal, light and heat, refrigeration, laundry and cooking facilities, landscaping of home grounds, repairs and improvements desired, new construction contemplated, and financial assistance needed or desired in this. Some of these points were checked as a result of the observation of the enumerator, others through the statement of the occupant of the house.

The information from the completed schedules has been summarized by counties and then for the state as a whole. Since the counties surveyed were selected from various sections of the state, the picture of farm housing conditions presented by the state summary may be accepted as being quite typical of the farm houses of the state.

In the counties surveyed, 55 percent of the owners' homes and 39 percent of the non-owners' homes were found to be in good condition; 29 percent of the owners' homes and 34 percent of non-owners' homes in fair condition; and 16 percent of owners' homes and 27 percent of non-owners' homes in poor condition. These figures refer to the condition of the component parts of the house.

Without giving a complete report of the findings of the survey, some of the other particularly interesting things found were that in the white homes there was an average of a little over one and one-tenth rooms per occupant; in the non-white homes the average was a little over eight tenths of a room per occupant. Seventy-nine percent of the whites carried water for the house, the average distance it was carried was 198 feet; 99 percent of the non-white carried water an average distance of 389 feet.

Seventeen percent of the white families had cold water piped into the house, while only 1.1 percent of the non-white families had even this convenience.

(The Farm Housing Survey of Virginia (Con'd.))

A total of 17 percent of farm families had no sort of toilet whatsoever, 14 percent of these being white and 24 percent non-whites; while 45 percent had unimproved toilets; 49 percent of these being white and 36 percent non-white; 31 percent had outdoor toilets of the improved variety. In the latter class 27 percent were white and 41 percent non-white. Only 10 percent of the white homes had flush toilets, while less than 1 percent of the non-white homes had these. Ten percent of the white homes contained bath tubs, and less than 1 percent of the non-whites; while 20 percent whites had kitchen sinks with drains, and only 1 percent of the non-whites had these. Septic tanks and cess-pools were found on the premises of 10 percent of the white homes, and on 5 percent of the non-white homes.

A total of 13 percent of all farm homes had electricity, 3 percent had mechanical refrigeration, 7 percent had power washing machines. A total of 92 percent of the homes had surface drainage away from the house, 58 percent had lawns and 54 percent plantings.

After the schedules had been checked by the enumerators of a county, the agricultural engineer went over 4 to 5 percent of them and followed up this part of the survey by making an estimate of the cost of needed improvements, as checked at each

point of the schedule. They found that the cost of repairs and replacements needed on the houses in the various counties of the ten surveyed ranged from \$800,000 to \$3,000,000, an average of about one million dollars per county. The potential repair work for the state, as a whole, as estimated in this way, would be about one hundred million dollars.

In connection with the survey, the occupant of each farm home was asked what he or she would do if \$500 were available solely for the purpose of being spent on the house itself, if \$250 were available, if \$100 were available. With the white families in the counties surveyed, were \$500 available, the desires ranged in about the following order of importance: (1) Interior walls, ceilings, floors; (2) exterior walls; (3) roof; (4) porches; (5) water system and sanitary equipment. With the non-white families the desires were: (1) Interior walls, ceilings, floors; (2) exterior walls; (3) roof; (4) porches; (5) doors, windows and screens. In all classes there was, comparatively, very little desire for built-in equipment, or for cooking or laundry facilities of an improved type.

Only 13 percent of the white families and 25 percent of the non-white families were interested in borrowing money, even if the interest rate was satisfactory and if repayments could be distributed over a period of ten years.

It is not known just what will come of the farm housing survey as far as activity on the part of the agencies at Washington is concerned. They are following it up in 46 states with a power survey at present to obtain information relative to present rural power service and its utilization, and to appraise the possibilities of supplying electric service to additional rural customers. If the indications of the aim of the survey, as stated in the beginning, are followed out, a public works program of farm home building and repair may develop.

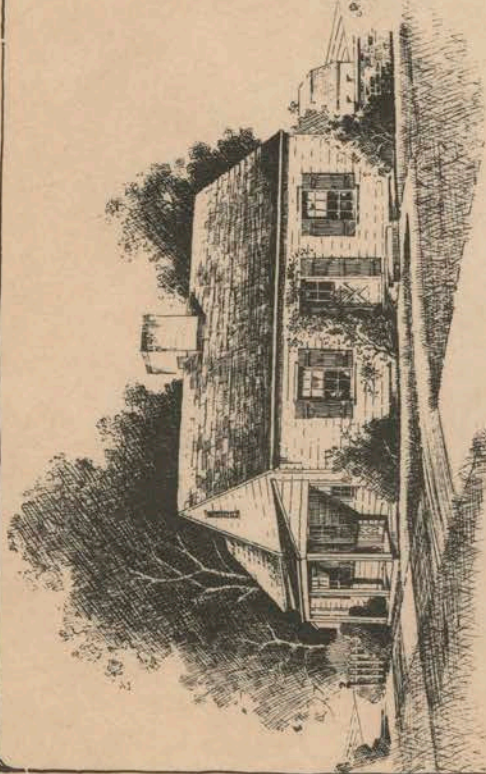
For three months and a half, however, the federal department of agricultural engineering had a corps of architects working in the agricultural engineering department of V. P. I. to develop plans for farm homes which might be built for from \$1000 to \$5000. Each of these homes was so planned that a small house might be built in the beginning and additional rooms added at a later time. Built-in equipment and convenient arrangement were included in each house. In fact these features were planned by the architect in consultation with the home management specialist of the home demonstration service. These house plans, which are available free of charge upon request to the agricultural engineering department of V. P. I. show that even at low cost, a house may be built to be both convenient and beautiful. In the specifications which accompany these plans, the architects attempted to stress the points which the prospective builder ought not to eliminate from his building, should he feel inclined to economize in such a way, features, the elimination of which would spoil the lines of his dwelling.

A recent press release from Washington stated:

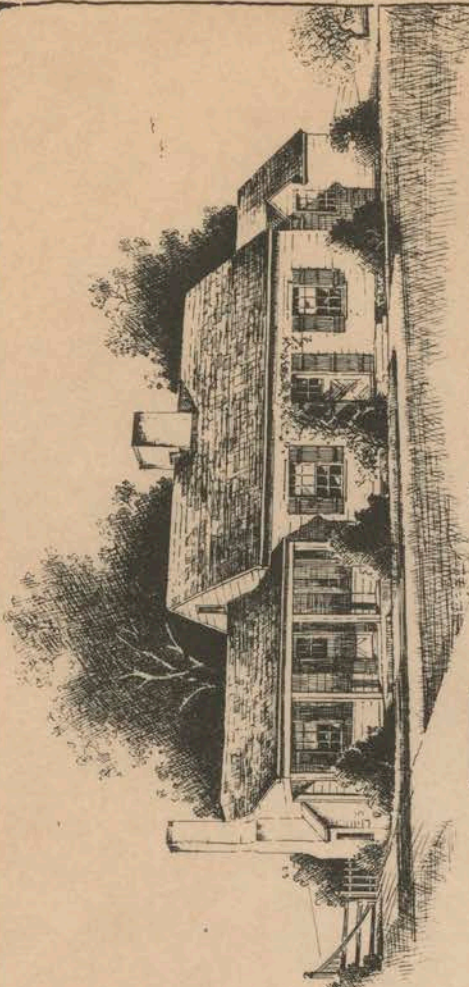
"Since the results of the farm housing survey have been coming in from counties in many states where Civil Works investigators are at work under the direction of the United States Department of Agriculture, there have been many indications that large manufacturers and merchandisers of building materials and home equipment are expecting a better demand for lumber, paint, roofing, hardware, water supply systems, heating and lighting plants and other home comforts and conveniences. Replies to a questionnaire recently sent by the farm housing survey to large mail order houses and manufacturers show a willingness to go

as far as reasonable safety permits in extending credit for the purchase of such non-consumable goods."

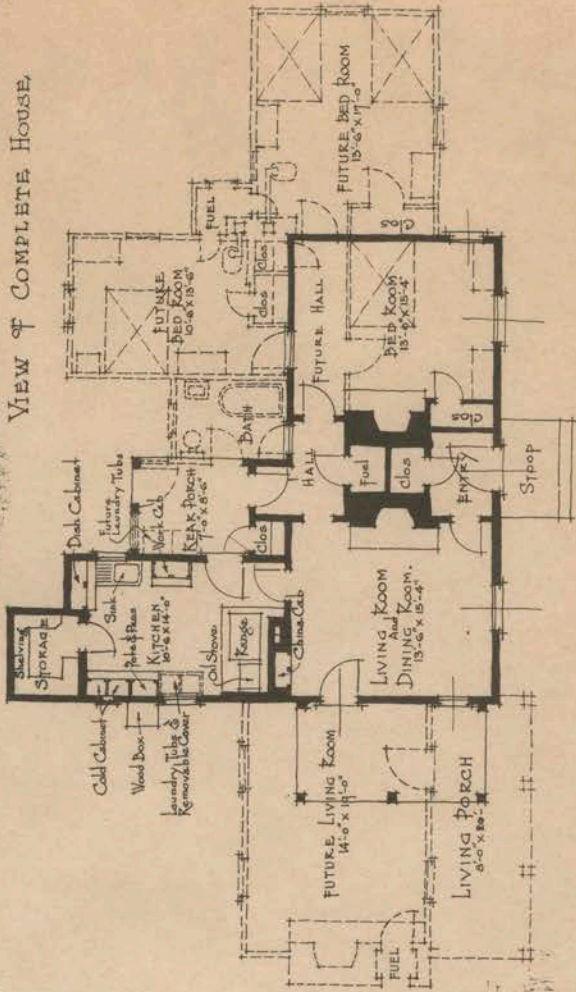
Whether or not anything beyond the above-mentioned things comes of the farm housing survey, as far as governmental departments are concerned, it seems that this study of the conditions and needs of the farm homes of the state should be a real challenge to each and every one who is interested in home economics education in the state. Members of the agricultural extension service, members of the home economics teaching staff, all are dealing in Virginia with occupants of farm homes. Certainly the survey offers an opportunity to develop more pertinent plans of work than have been developed in the past!



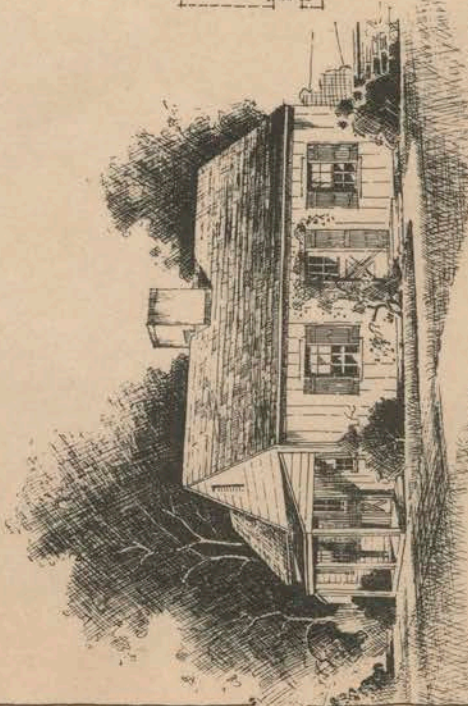
VIEW OF ORIGINAL UNIT  
Scheme No. 1



VIEW OF COMPLETE HOUSE



PLAN  
Showing Future Additions.



VIEW OF ORIGINAL UNIT  
Scheme No. 2

DEPARTMENT  
AGRICULTURAL ENGINEERING  
EXTENSION DIVISION  
VIRGINIA POLYTECHNIC INSTITUTE  
BLACKSBURG, VIRGINIA

UNITED STATES DEPARTMENT OF AGRICULTURE  
FEDERAL CIVIL WORKS ADMINISTRATION  
FARM HOUSING PROJECT

HOUSE "B"  
SCHEMES 1 & 2  
FEBRUARY 1934

PROPOSED PLAN OF COOPERATION BETWEEN LAND GRANT COLLEGES OF THE TENNESSEE VALLEY STATES, THE TENNESSEE VALLEY AUTHORITY AND THE U. S. DEPARTMENT OF AGRICULTURE FOR SOIL MANAGEMENT IN THE VALLEY THROUGH A PROGRAM OF ADJUSTED AGRICULTURE. (LAND GRANT COLLEGES ASSOCIATED WITH DEPARTMENT OF AGRICULTURE MAKE THIS REQUEST.)

1. PURPOSE OF PROJECT--To bring about the adoption of farm practices, both vegetative and mechanical, which have been proven practical in reducing losses resulting from erosion; and to conduct investigations to discover and develop additional methods of erosion control adapted to conditions in the Valley.
2. SCOPE OF PROJECT--All privately owned lands in the Valley being operated as farm lands.
3. PROCEDURE--OBLIGATIONS OF TVA
  - (a) The Tennessee Valley Authority shall employ, with the advice of the states, a Soil Management Supervisor, to cooperate with the states in the development of a regional erosion control program. He shall cooperate with the states in the selection and training of personnel to act as assistant county agents in carrying out the program. Such personnel shall also be employed by the Tennessee Valley Authority.
  - (b) Assistant County Agents shall be furnished only in counties employing a regular County Agent, which agree to undertake erosion control on a county-wide basis.
  - (c) A county program of soil erosion control may include all demonstrated effective means of soil erosion control such as readjustment of farm program, including the substitution of sod crops for cultivated, farm forestry, terracing, the shifting of necessary row crops to more level lands, strip and contour farming, etc. In the beginning the methods to be featured in any given county will be that which will result in the maximum amount of immediate erosion control. Other desirable majors will be promoted as rapidly as interest and conditions warrant.
  - (d) The TVA will purchase two or more terracing units to be used for the purpose of training personnel, and for the determining of costs and best methods of constructing terraces under the various conditions. This equipment may also be used for demonstrations where deemed advisable for the promotion of a terracing program.

(Over)

Project Statement on Erosion Control - TVA (Con'd.)

- (e) The cost of terracing will be paid by the farmer who will obtain the terracing equipment through county administration, cooperative organizations, or otherwise, a plan of operation which has proven practical and very popular in certain areas where it is now being used.
- (f) The TVA will, wherever available, furnish CCC labor to construct and protect terrace drainage outlets. (Relief organizations will be asked by the colleges to cooperate in furnishing relief labor for similar work).
- (g) Where erosion control is to be attained through the thickening of vegetative cover the TVA will furnish fertilizer, through farm organizations designated by the County Agent, to conduct demonstrations on selected farms.
- (h) The TVA will cooperate with the Colleges and the U. S. D. A. in conducting erosion control experimental work on certain experimental stations now in the area, or in the establishment of such work on new fields or stations where the need of such is indicated.

THE LAND GRANT COLLEGES AGREE:

- (a) To cooperate with TVA in the selection of personnel, technical direction and supervision of same within the state.
- (b) To supply the services of such of its personnel, both from headquarters and within the counties, as is needed to help set up and carry out the erosion control program.

Secure cooperation of E. C. W. camp personnel where needed.

Virginia Extension Service:

Furnish technical direction and consulting advice through the various extension specialists concerned in all phases of the project.

Submit definite recommendations with respect to erosion control, field layout, physical improvements, crop rotation, pasture improvement, fertilizer application, livestock practices, food production and conservation, etc.

Plan of County Agent's Duties:

Work:

Select farms for demonstration, supervise the work of the Assistant County Agent, confer and advise with farmers in carrying out the recommended practices.

Assistant County Agent's Duties:

Be directly responsible under the direction of the county agent for the project. Survey and map the farms selected for demonstration. Make plans for and supervise construction of such mechanical and other erosion control works as are needed and plan other physical improvements recommended. Keep records of the results, etc., of adopted practices.

Other Cooperators:

The Agricultural Economics Department of V. P. I. will obtain farm records of each farm, keep cost and income records throughout the life of the demonstration and cooperate with others in developing plans for and improvement of these farms.

The Agronomy Department of V. P. I. will advise on soils, fertilizers and assist in developing plans for pasture improvement, crop rotations, etc.

The Agricultural Engineering Department will advise and assist in developing mechanical erosion control measures, drainage, irrigation, machinery, buildings and other physical improvements.

Other departments such as Animal Husbandry, Poultry, etc., will assist in making recommendations in regard to developing plans in their particular fields.

Secure cooperation of E. C. W. camp personnel where needed.

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Furnish technical direction and consulting advice through the various extension specialists concerned in all phases of the project.

Submit definite recommendations with respect to erosion control, field layout, physical improvements, crop rotation, pasture improvement, fertilizer application, livestock practices, food production and conservation, etc.

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Assistant County Agent's Duties:

Be directly responsible under the direction of the county agent for the project. Survey and map the farms selected for demonstration. Make plans for and supervise construction of such mechanical and other erosion control works as are needed and plan other physical improvements recommended. Keep records of the results, etc., of adopted practices.

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Other departments such as Animal Husbandry, Poultry, etc., will assist in making recommendations in regard to developing plans in their particular fields.

SUGGESTED SET UP FOR A FARM TERRACING  
PROGRAM WITH EMERGENCY RELIEF ADMINIS-  
TRATION, THE STATE EXTENSION SERVICE  
AND THE COUNTIES COOPERATING

This program will be conducted as a part of the Rural Rehabilitation Project of the Emergency Relief Administration and as a part of the established soil and moisture conservation and soil building programs of the United States Department of Agriculture and the State Agricultural Colleges.

The object of this program is:

First, to terrace lands of relief clients on rural rehabilitation and of farmers on the border line, thereby taking off and preventing farmers from coming on the relief rolls.

Second, to terrace lands for any farmer who will pay the prescribed costs so as to prevent wasteful erosion.

Third, to provide a worthwhile project where desired for the employment of common relief labor.

This all combined will contribute largely toward controlling the greatest farm problem in the South, namely, that of soil erosion. Experimental results of the United States Department of Agriculture show that terraces accompanied by proper cultivation and cropping practices effect a control of from 85% to 95% of erosion on cultivated land.

It is not intended that this project be set up on a state-wide basis. The work should be undertaken only in those counties where the proper interest is manifested and there is a sign-up of farmers of such acreage as will warrant undertaking the terracing work project. Then as interest is shown, it can be extended.

In setting up the organization, the initiative and burden should be thrown as largely as possible on the counties.

The equipment should be bought by them, either through the county government or through a group of farmers.

In case the equipment cannot be bought in this manner, then, if thought advisable, the funds may be advanced through the state rural rehabilitation corporation. In all cases, however, the farmers will liquidate these costs by paying for the use of the equipment when the work is done on the lands.

(Over)



F. E. R. A. Project Terracing Outline (Con'd.)

The mechanical equipment for each unit for carrying on this program consists of one tractor, a terracing machine, slip scrapers, a levelling instrument, and any miscellaneous equipment that may be needed. More than one unit, sometimes four or five may be necessary to take care of the demand for terracing work in a county.

The farmers will also pay the tractor and grader operators, and expenses for the fuel, oil, grease, and repairs used in operating the outfit. They will also pay for the instrument man and redman who do the surveying. Charges for all should be made on an hourly basis which total, from \$2.50 to \$3.00 for every hour the tractor is used. These charges cover surveying, grading of terraces and shallow outlet channels, and rechecking of terraces after grading. Costs in many counties at present are ranging from \$1.00 to \$2.50 per acre.

The farmers will be required to stake or plow out terrace lines as they are surveyed, and to furnish stakes for indicating cuts and fills found to be necessary after the recheck survey. Farmers will also finish the cuts and fills as indicated by these grade stakes and will follow instructions for protecting the terraces and terrace outlets. All materials needed to protect outlet channels will be furnished by the farmers.

The personnel in the Emergency Relief Administration organization required to carry on this program is as follows:

- A. An assistant to the state rural rehabilitation director.
- B. One county terracing assistant.
- C. Six to twelve relief laborers per terracing unit, where desired (the number depending on county topography) used in constructing outlets.
- D. One relief sub-foreman per unit.

The employment of "A" will need no further project set up. The employment of "B", will be covered by a county project. The salary and mileage of "B", the county terracing assistant can be paid either out of funds from rural rehabilitation or funds used for work projects. The operation of "C" and "D" in any county will depend upon the schedule of the works division.

The State Extension Service will furnish an agricultural engineer, without cost to the E. R. A., who will have charge of the technical direction of the terracing work. In case the Extension Service is unable to pay for such a man, however, the E. R. A. may pay his salary and travel temporarily, but in no case later than June 30, 1934.

F. E. R. A. Project Terracing Outline (Con'd.)

The function of the assistant to the state director of rural rehabilitation would be to coordinate the participation of the E. R. A. in the farm Terracing Program with the agencies representing the State Extension Service and the counties. This will also include a certain amount of promotion work required to get the project going in the counties and such general supervision as will insure the E. R. A. that the funds are properly expended and that the work is smoothly and efficiently conducted.

The county terracing assistant will have general charge of the terracing project in the county under the general technical supervision of the extension agricultural engineer and the direction of the county project. His duties will cover promotion work, general supervision of the project and the keeping of all necessary records in connection with the units operating in the county.

It is recommended that a county terracing assistant be employed only when there is sufficient interest in a county to warrant such employment. He should be preferably agriculturally trained so as to enable him to contact the farmers to best advantage. He should be recommended or be satisfactory before employment to the county agent, the county or parish administrator, the extension agricultural engineer and the state rural rehabilitation assistant. He should be specially trained for his work by the extension agricultural engineer.

Engineers of the works division should be used to check the surveying work, to the extent the United States Department of Agriculture, the State Extension Service and the E. R. A. deem advisable to assure a high standard of terracing work in conformity with research knowledge.

To facilitate the terracing work, there should be a county terracing committee. This committee should include the county agent, the terracing assistant, the county administrator or the head of the county works division, a representative of the county government, the county supervisor of rural rehabilitation, if such a one is available, and two or more select farmers.

This Committee would have charge of the general direction and policy of the project in the county. It should meet at regular intervals to review and promote the program of the project.

Through this Committee, the general policies of the terracing program in the county will be laid down.

(Over)

F. E. R. A. Project Terracing Outline (Con'd.)

This Committee, or some authority designated by it, will be responsible for the selection and amount of wages of the instrument man, the rodman, the tractor driver and grader operator required by each unit.

Through this Committee, or through the county government, the equipment, upon the approval of the extension agricultural engineer, will be bought. This Committee will be responsible for the collection from the farmers and the liquidation of the equipment and the payment of the four men used to operate a unit.

Relief labor where it is available and desirable can be used in constructing the terrace outlets. This labor, as far as it is possible, should come from the rural relief clients, particularly the rural rehabilitation clients. This labor should be selected by the works division director of the county. It must be paid for by the farmer at its appraisal value. The relief agency will stand any difference in this appraisal cost and the relief wages paid this labor.

In doing the terracing work, rural rehabilitation clients and border line cases must always be given the preference. In case these people do not have sufficient funds to pay for such work, then it is the duty of rural rehabilitation to advance the funds and obtain repayment as with any other advances.

On the larger farms, it is recommended that not more than twenty-five percent of the total cultivated acreage be terraced in one year. This will enable the unit to serve more farmers, and the farmers to meet their payments more easily and to take care of their terraces to better advantage.

A form of release from liability to be signed by land owners is advisable for the security of the persons or organization sponsoring the work.

# THE HOME-MADE BRICK BROODER

BY

H. H. GORDON, Assistant Agricultural Engineer

AND

HARRY L. MOORE, Poultry Husbandman

**T**HE homemade brick or stone brooder was first tried out in Alabama about 1923 and is now generally used in most southern states. Poultrymen in Virginia, particularly in the southside section, became interested in this type of brooder about three years ago and a few were built according to plans from other states and used with varying results. Some have proved satisfactory, others unsatisfactory. As Virginia has colder winters, particularly in the mountainous sec-

tions, farms include the use of commercial brooders using either coal, oil or wood as fuel. Most coal brooders require hard or anthracite coal costing \$17.00 to \$18.00 a ton. Oil is a little less expensive but the danger from fire is greater. The brooders themselves are rather expensive. On the other hand, the brick brooder uses wood produced on the farm and usually the only cost of this wood is the cutting. Virginia flock owners state that the brick brooder requires a minimum of attention



Figure 1. — Brick brooder with hovers removed.

tion, than the states in which the brick brooder was developed, the state extension service was unwilling to recommend its use or prepare plans for its construction until it was definitely established by experience and a study of its limitations that it could be used with safety. Conclusions from this study are that the brick brooder stove as illustrated in this circular may be used profitably in brooding chicks.

Present methods of brooding on average Virginia

and that even if the fire goes out the bricks will hold heat for a long time. This makes chilling much less likely than with other stoves. The cost of the brick brooder is comparatively small since much of the material used in its construction is often available on the farm, or may be obtained second hand at very low prices. Some have been built for no cash outlay whatever and others for only a dollar or two. Brick gives best results but stone has been used satisfactorily.

At first glance the plan finally developed for Virginia conditions may seem more elaborate than necessary but a close examination will show that all the features tend toward greater efficiency and safety and more ease of operation. For best results the plan should be carefully followed.

## Bill of Material

Materials needed for a brick brooder based on a length of 9 feet as shown on plan are:

- 700 common bricks (new or used)
- 4 sacks cement
- 1 sack hydrated lime
- 1 cu. yd. sand
- 6 8" strap hinges
- 18' 24 gauge sheet iron 36" wide
- 1 pc. 20 gauge sheet iron 24" x 24"
- 30 stove bolts
- 1 pc. angle iron 1" x 1" x 30"
- 1 stove pipe damper
- Several joints 6" stove pipe (Number depends on building)
- 1 roof flange

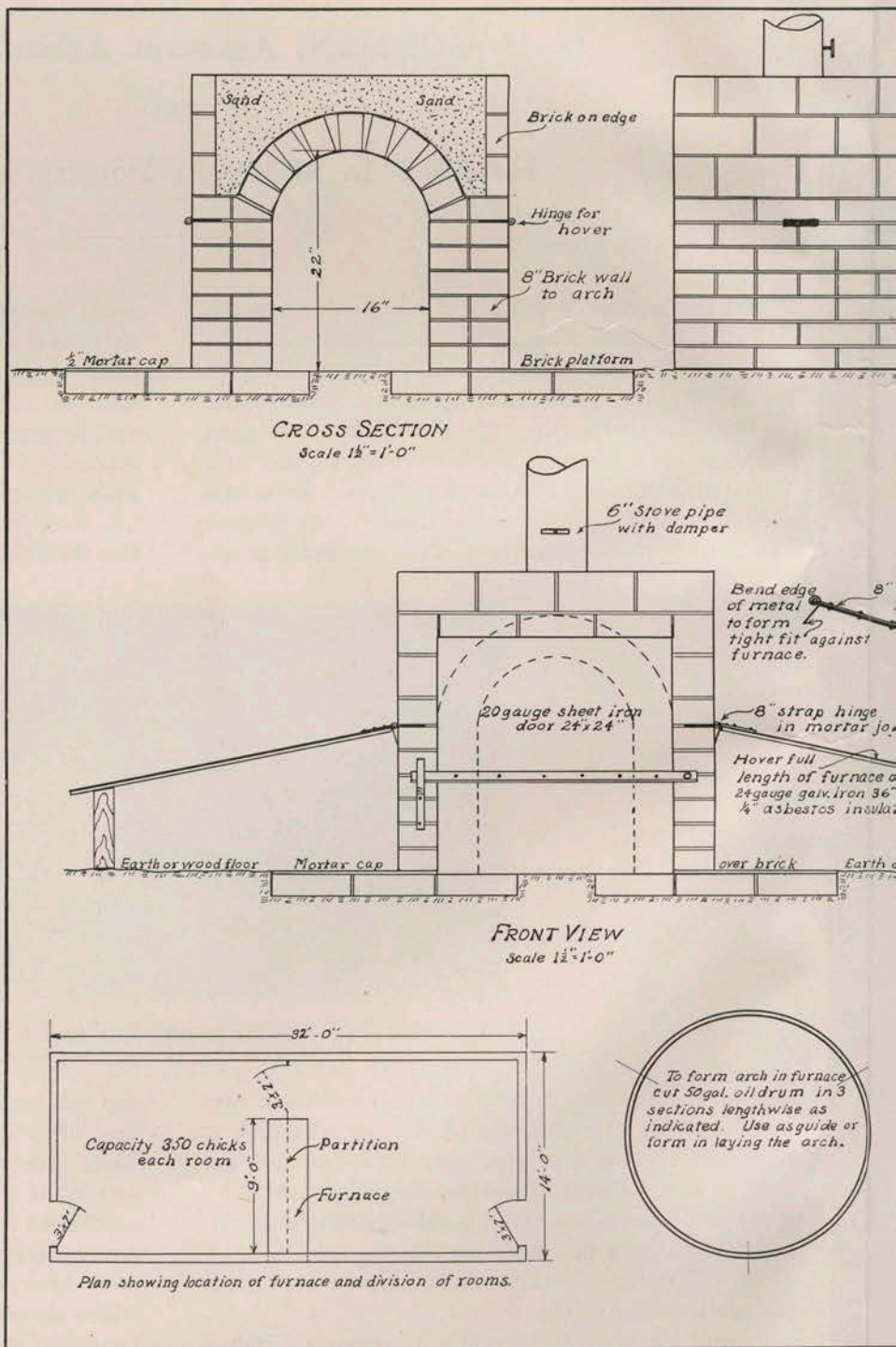
The 9 foot brooder is based on a house 14 feet deep with space for hovering two broods of chicks at the same time. Such a brooder is adequate for a room 20 feet square or for a building 14 x 32 feet such as is illustrated on plan. If only one lot of chicks is to be hovered in a building 12 feet deep, the length of stove may be shortened in proportion. The space for comfortable hovering is the important point. The stove is made long to prevent crowding. In this plan hovers are provided on both sides. These are considered essential for the colder sections of the state and are advisable even under Southside Virginia conditions. To avoid undue loss of heat the use of asbestos board  $\frac{1}{4}$  inch thick, or more, is also suggested.

In a number of cases old tobacco barns remodelled as shown in Figure 2, with an open front and removable or permanent ceiling; have been used very satisfactorily in connection with the brick brooder. In Southside Virginia this offers many possibilities for starting in the poultry business cheaply.

## Construction

The stove should be located in the center of the building. While it may be fired from the inside, the better practice is to fire from the outside, as this does not disturb the chicks and lessens danger from fire. If the building is large enough for two batches of chicks, a wire partition should be erected as shown, dividing the chicks and hover space equally. Three hundred and fifty chicks should be the maximum number in any one batch, or 700 to the stove.

If the brooder house floor is of earth or concrete, the



stove may be built directly on the floor surface. If the floor is of wood, a hole at least 4 inches larger than the stove must be cut and a foundation of brick, or stone and sand, built up to the floor level. Bricks should be placed on edge between the stove and floor around the entire circumference of the hole.

The stove walls should be 8 inches thick. In other words, two bricks laid flat, side by side. Mortar joints should be broken, that is bricks in alternate rows should reach from center to center of the two bricks below as shown. A header course in which one layer of bricks is laid across is also desirable. The bricks should be

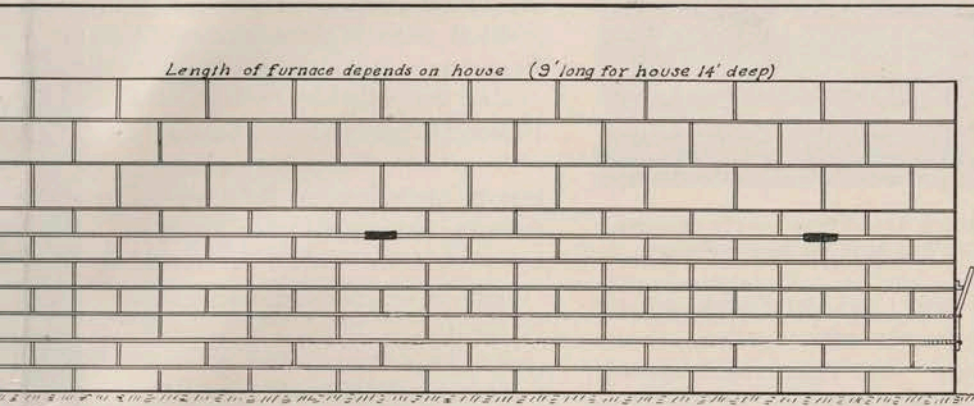
laid up in cement mortar consisting of 1 part cement and 3 parts sand with just enough lime to make the mortar more workable. The lime should not exceed 10 percent of the volume of cement. Mortar joints should be  $\frac{3}{8}$  to  $\frac{1}{2}$  inch thick. (Clay or clay and salt are sometimes used for mortar but are less permanent and desirable).

Hinges for attaching the hovers are set in the mortar joint between the sixth and seventh courses of brick. If a mason is laying the brick, no form will be necessary for the arch, as he is familiar with "keying in" the arch brick. If the farmer is laying the brick, a form is desirable. An old 50 gallon oil drum divided lengthwise into three equal parts is desirable for this (see plan) or wooden forms may be used. The walls of the stove are carried up three more bricks on edge as shown, or if preferred a stronger wall can be made by using six layers of brick and laying them flat. The purpose of this top wall is to allow for covering the area with sand. The sand will conserve heat, provide humidity when wet, and prevent possible injury to chicks. Covering the top with wire at an angle to prevent chicks roosting is also desirable.

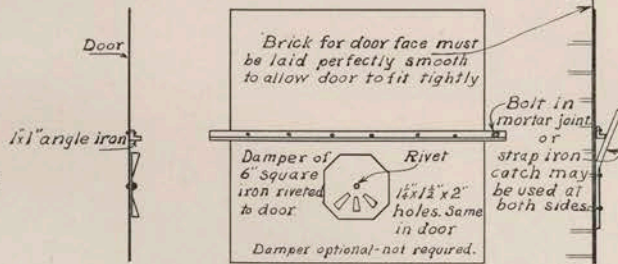
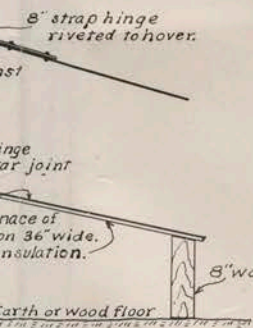
The stove pipe should be set in the arch about 8 inches from the end opposite the door. The first joint of pipe should contain a damper. The brick forming the door face must be laid up smoothly so the door will fit tightly. Little or no draft is necessary once the fire is well started. The door is made of a heavy sheet of iron two feet square, to which an angle iron is riveted. The angle iron may be bolted at one end as shown, or it may set in a catch at both ends. These catches are made of strap iron and bent so the door will be pressed tightly against the door face.

Hovers are made of medium weight sheet iron 3 feet wide and the length of the stove. One edge of the sheet iron is bent to a 45 degree angle to insure a tight fit against the stove wall. The hinges are fastened to the bent edge with stove bolts. The other edge is supported as frequently as necessary with legs 8 inches long. Hovers are made removable by drawing the pin in the hinges.

The length of stove pipe will depend on the roof height or pipe exit. Whether the pipe goes through roof



SIDE VIEW  
Scale  $\frac{1}{2}'' = 1'-0''$



DOOR DETAILS  
Scale  $\frac{1}{2}'' = 1'-0''$

<b>BRICK BROODER</b> <b>STOVE</b> <small>Designed by K.N. Ellis, Petersburg, Va.</small>	AGRICULTURAL ENGINEERING DEPARTMENT EXTENSION DIVISION-VPI		
	<small>Drawn by H.H.G. Traced by V.R.H. Revised by C.E.S. and Foultry Dept. VPI.</small>	<small>Sheet 1 of 1 Oct 3, 1933. Scale as shown</small>	<small>Refer to Number <b>F-20</b></small>

or wall, the wood should be cut away three or four inches and tin or asbestos used as an insulation. If the pipe goes through the roof a roof flange is desirable to prevent leaks.

It is important that the stove be built two to three weeks before a fire is necessary so the mortar may gain its full strength.

## Fuel

Green cord wood or poles, preferably oak or other hard wood makes the best fuel. Sticks up to 8 inches in diameter are satisfactory; the larger ones are more desirable. Two sticks are used at a time. With such wood attention to the fire is required only two to three times daily.

## Operation

Two days before chicks are to be put in the house, a fire should be started in the brick brooder to dry out the house and floor thoroughly, and give the operator experience in firing and controlling the draft. Those using the brooder claim that once the fire is started and the drafts properly adjusted it is necessary to



Figure 2. — Tobacco barn remodelled and used for brooder house.

fire only once daily with suitable wood in normal weather. Colder weather and more rapid burning wood, of course, call for greater attention.

## Advantages

Among the advantages of the brick brooder in addition to low first cost and low operating costs are (1) safe-

ty, (2) freedom from fumes, (3) ease of operation, (4) simplicity and long life, (5) less danger of chilling, (6) ample hover space.

## Disadvantages

While several minor disadvantages of the brick brooder might be mentioned, the only one of any importance is that the brooder house can not be moved to fresh ground as can the portable brooder houses. Very practical ways of overcoming this disadvantage are rotating runs or by moving the pullets to fresh ground as soon as they are old enough to do without heat. The cockerels may be kept in the house and fed a special fattening ration until ready for market. When the pullets are moved to clean ground, they need some kind of shelter. A simple cheap, range shelter such as illustrated in figure 3 on this page has proven satisfactory. Detailed plans for this shelter, as well as for standard laying houses and numerous other poultry buildings, are available through your local county farm or home agent or by writing direct to the Extension Division, Blacksburg, Virginia.



Figure 3. — Range shelters help to grow better pullets.

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

Blacksburg, Virginia  
August 22, 1934

To the Garden Directors  
of the Emergency Relief Administration  
of Virginia

At the request of Mr. M. L. Myers, Director  
of Subsistence Gardens, we are sending you the enclosed  
notes and sketches which will be of interest to any one  
wishing to provide inexpensive storage for fruits and  
vegetables. Although only one copy is being sent to you,  
additional copies will be supplied on request. It is  
preferred, however, that you advise the agricultural  
extension division at Blacksburg, the names of those in  
your county who want to construct such storages and a  
copy will be sent direct to the user.

We trust this information will prove helpful.

Very truly yours,

*Chas. E. Seitz*

Chas. E. Seitz

Extension Agr'l Engineer.



COOPERATIVE EXTENSION WORK  
IN  
AGRICULTURE AND HOME ECONOMICS  
State of Virginia

Va. A. & M. Col.  
and Poly. Inst.  
and U. S. Dept. of  
Agriculture Coop.

EXTENSION SERVICE  
COUNTY AGENT WORK

F A R M   S T O R A G E  
F O R  
F R U I T S   A N D   V E G E T A B L E S  
Prepared By  
L. B. Dietrick, Vegetable Gardening Specialist  
and  
V. R. Hillman, Agricultural Engineering Dept.

- - - - -

Many farms without cellar or other suitable means for vegetable storage may secure such storage at very slight expense if one of the means suggested in these pages is followed.

Figure 1, is a building of post and slab construction. After the dirt is dug away, two rows of posts through the center form the walk-way and the front of the vegetable bins. Two other rows of posts, one on either side, form the outside walls. Slabs or boards are placed on the outside of these posts and held in place by dirt which is tamped back in place as the wall is built. If the edges of the slabs are straightened, a fairly tight wall results. They may be nailed lightly to stay better in position until the dirt is replaced. Rails or poles may be used instead of slabs or lumber if some old metal roofing or other such material is available to place on the outside of the wall to keep the dirt from sifting through. Vegetable bins 2 or 3 foot wide are built along each wall and shelves for canned fruit placed above.

LOCATION:--The most convenient location for building one of these storage houses is in the side of a hill or bank. There is no need then to provide drainage, and entrance may be gained at floor level of the storage without using steps. Figure 2 shows how the front wall will look. The front is boarded up with slabs or plank, and a heavy door provided to keep out frost in cold weather. The whole structure must be covered with from 2 to 3 foot of earth for insulation. In most localities a south or southeast exposure will be most desirable. In warmer territory it may be desirable to extend the roof a few feet to partly shade and protect the front wall in order to hold the temperature down to a desirable point.

VENTILATION:--The most important part in the construction of the storage is the provision for proper ventilation. Good ventilation must be provided. This is secured by an out-take flue 12 inches square placed in the top near the back of the storage room. Intake air is secured through flues on either side of the door. The front wall is tightly boarded on the inside of the posts, which leaves a space between this and the outside boards. One outside board on either side of the door is hinged as shown and may be opened for ventilation. If these doors are opened when the outside air is cooler than the cellar, cold air will enter, pass down the wall and into the house at the floor. Warm air will escape through the out-take flue and the house, together with its contents, can be brought down to a safe storage temperature.

During cool nights the ventilators are left open but they must be kept closed in warm weather and during warm days to prevent the circulation of warm air through the cellar. In very cold weather all openings must be kept closed to prevent freezing temperatures. The out-take flue should be stopped with papers or a burlap bag if no damper is provided in the stack.

**FLOOR:**--It is important to note that the floor is not solid but is made up of boards 4, 6, or 8 inches wide with  $1\frac{1}{2}$  or 2 inch openings between them. This floor is laid on sills 6 or 8 inches high to allow good circulation of air under the vegetables. Notice in figure 5 that a large part of the intake air goes under the floor and filters up through the floor and storage space.

**STONE CONSTRUCTION:**--Figure 3 shows a similar plan but of stone construction. These stone walls should be 16 to 20 inches thick and, if care is taken to select large well shaped stones, quite a good wall will result with only clay mortar. Cement mortar will be more satisfactory, however. The intake flue on this stone building is a stone chimney built on one side of the door with a hooded opening at the top and an opening through the wall at the bottom as indicated in figure 5. Figure 4 shows an outside view of the completed structure before dirt is placed over it. This building should also have 2 to 3 feet of dirt over it for insulation.

**DIMENSIONS AND CAPACITY:**--The minimum size for these storage cellars is  $6\frac{1}{2}$  or 7 feet wide by 8 feet long and 7 feet high in the center. If the bins are made  $2\frac{1}{2}$  feet deep and  $2\frac{1}{2}$  feet wide the full length of the cellar, they will hold approximately 40 bushels of vegetables. Two 18 inch shelves above these bins will give shelf space for about 200 half gallon cans of fruit or vegetables. These figures given are inside dimensions and may be increased by any amount desired if more storage is required. The side wall should in no case, however, be built more than 7 feet high if this type of construction is used, as in heights greater than this the walls will need more reinforcing to support the pressure of the earth.

**PRODUCTS THAT MAY BE STORED:**--Vegetables which may be stored in this cellar are Irish potatoes, beets, carrots, turnips, rutabagas, parsnips, salsify, cabbage and celery. Rotting or diseased vegetables should not be stored as they not only spoil, but will damage other vegetables in storage. Sweet potatoes will not keep in this kind of storage. They require a warm, dry place. If apples are to be stored, a two compartment cellar should be provided, as apples absorb tastes and odors readily.

These plans are suggested as a means of securing the cheapest possible storage structure, coupled with convenience and proper ventilation. If more permanence, cleanliness, rodent control, etc., are desired, this same type of structure may be built of reinforced concrete in any size required.

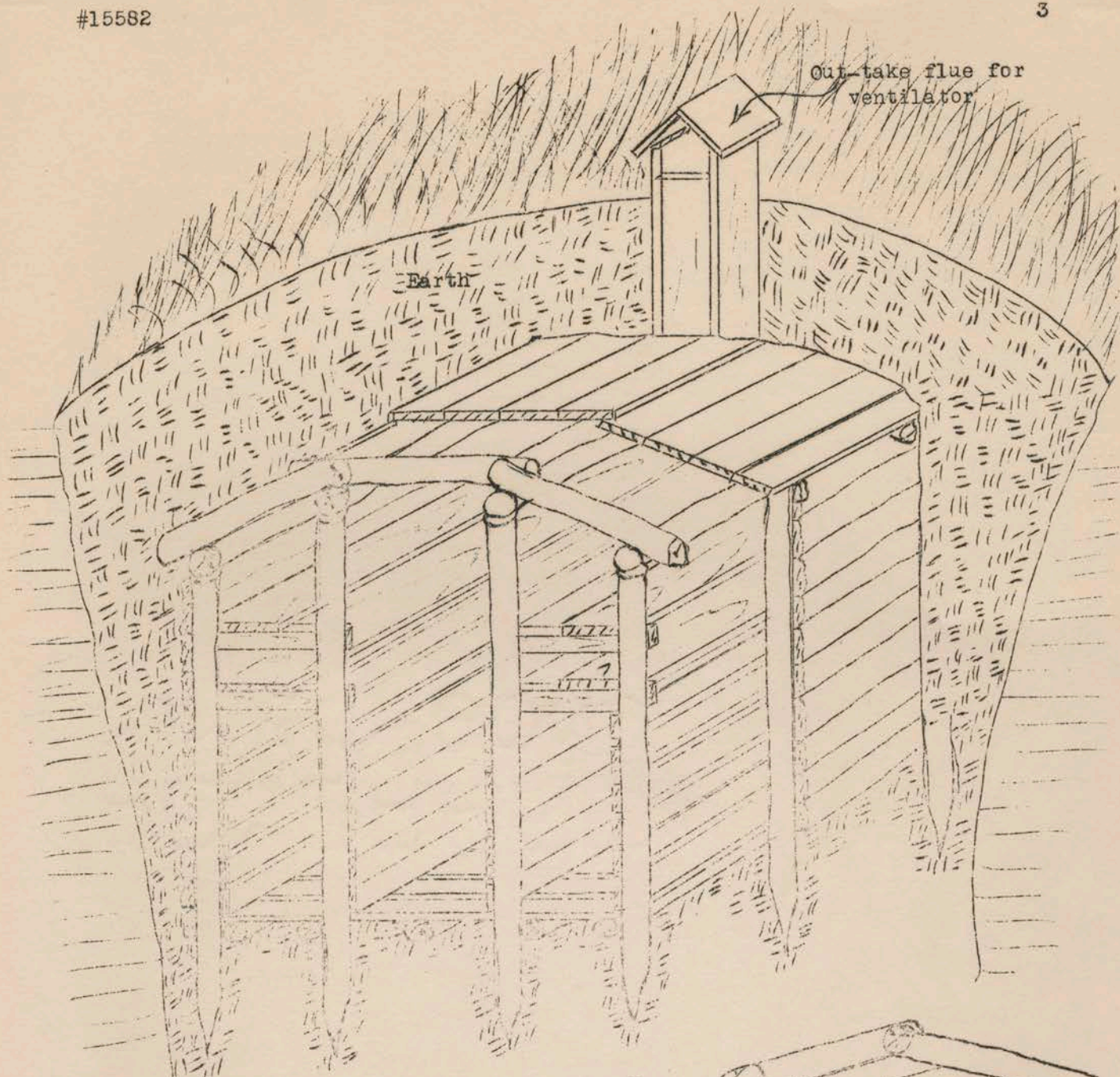


Fig. 1 - Post and timber construction

Air intake for  
ventilation

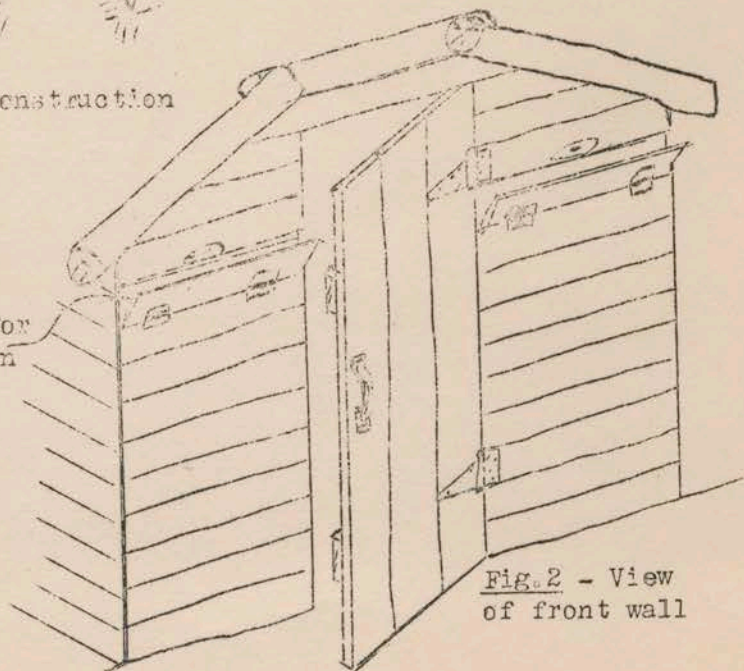


Fig. 2 - View  
of front wall

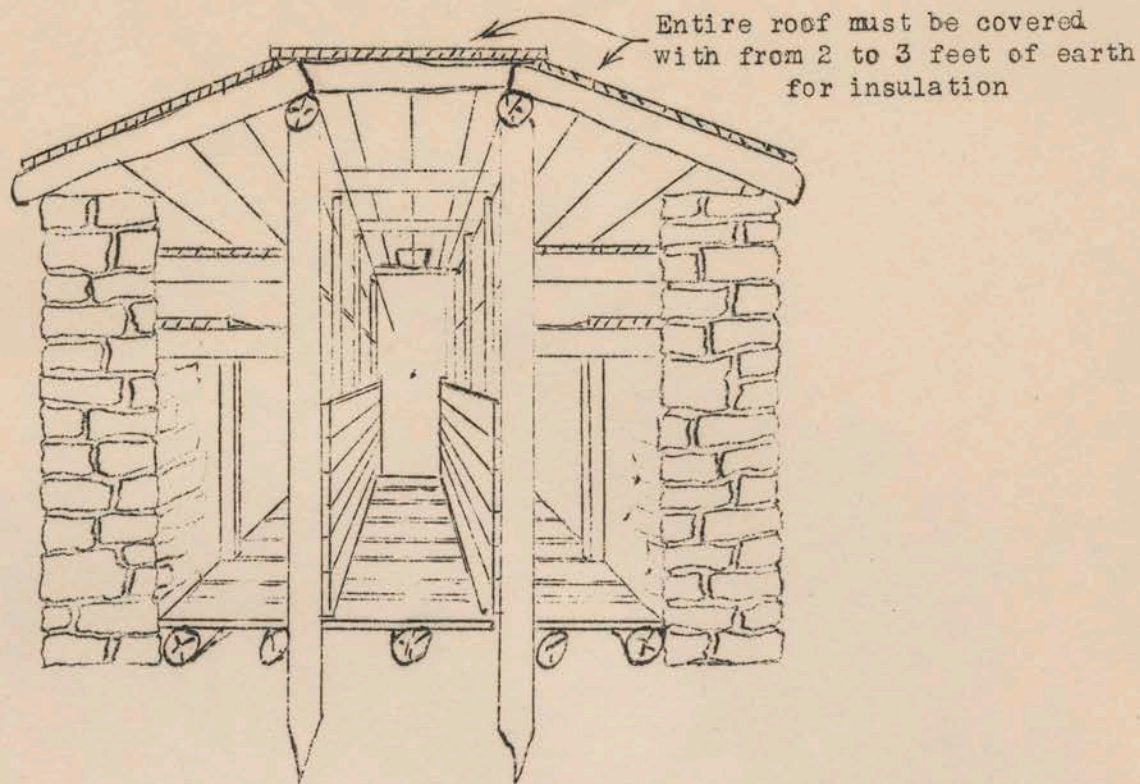


Fig.3 - Showing stone wall with bin and shelf construction

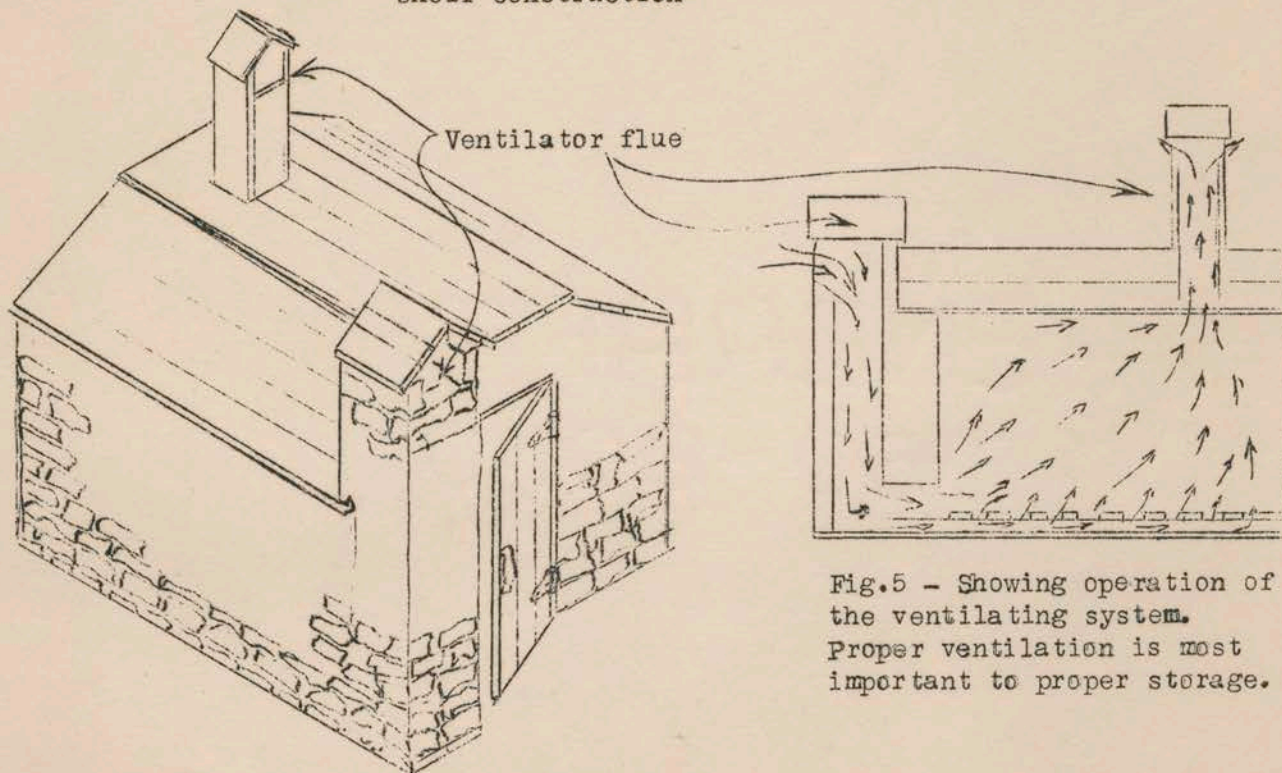


Fig.5 - Showing operation of the ventilating system. Proper ventilation is most important to proper storage.

Fig.4 - Outside view of stone building  
Note stone chimney on front for air intake

COOPERATIVE EXTENSION WORK  
IN  
AGRICULTURE AND HOME ECONOMICS  
State of Virginia

Va. A. & M. College  
& Poly. Inst. & the  
U.S.D.A. Cooperating

EXTENSION SERVICE  
County Agent Work

Blackstone, Va.  
September 29, 1934

Dear Sir:

We are much pleased with the interest shown in the terracing demonstration at Twin-Lakes this week. In fact, a group of progressive farmers has requested that the equipment be left in Nottoway county next week in order to do some terracing for them. The Virginia Tractor Company, Richmond, Virginia, state agents for Caterpillar equipment, has agreed to do this. These farmers have agreed to pay the usual charge of about \$2.50 per hour. From ten to twenty acres are done in a ten hour day.

Below is a schedule of next week's work. This gives you other opportunities of seeing this outfit in operation. Go to see the demonstration nearest you. Take several of your neighbors with you. A full day's work will be done at each farm.

<u>Date</u>	<u>Owner of Farm Where Terracing Outfit will be Working</u>	<u>Location of Farm</u>
Oct. 2	' _____	' _____
" 3	' _____	' _____
" 4	' _____	' _____
" 5	' _____	' _____
" 6	' _____	' _____

Halifax, Mecklenburg and Campbell counties have requested demonstrations. There is an excellent chance of each of these counties purchasing one of these units. Whether or not one returns permanently to Nottoway county depends on your interest in saving Nottoway county soil. It's washing away very rapidly. You know that. The sooner we get started the wiser and richer we'll be. Why can't Nottoway be the first county in Virginia to take definite steps to stop this terrific waste?

Yours very truly,

*G. R. Mathews*

G. R. Mathews  
County Agent.

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

Blacksburg, Virginia  
September 24, 1934

TO ALL COMMITTEE MEMBERS:

Dear Sir:

Since your county agent is so very busy with extra duties he has appointed you to serve on a Soil Erosion Control Committee for your county.

It happens that this is one of the worse eroded counties in the state and we will consider ourselves fortunate if you can work with us in trying to stop some of this enormous loss. We should hold meetings from time to time and I will likely have occasion to write you frequently.

In order that you might study the plan we have in mind for your county, I am sending you, under another cover, a copy of the Dadeville Record. I made a visit to this section of Alabama last Wednesday and found most satisfactory progress being made. Twenty units are now in use in nine counties. There are five units in Tallapoosa County alone.

Along with this paper I am including "Terracing Farm Lands" and "Soil Erosion, A National Menace", two very important bulletins on this subject. Please read them carefully.

No more important work could be undertaken in your county and I hope to have your complete cooperation.

With best wishes, I am

Yours very truly,

J. A. Waller, Jr.  
Agricultural Engineering Dept.

JAW:P

COOPERATIVE EXTENSION WORK  
IN  
AGRICULTURE AND HOME ECONOMICS  
State of Virginia

Va. A. & M. Col.  
and Poly. Inst. &  
U.S.D.A., Cooperating

EXTENSION SERVICE  
COUNTY AGENT WORK

Blackstone, Virginia  
October 17, 1934

Dear Sir:

"October 3 the terracing unit was used to build five terraces (3200 feet) on my farm. I consider the work was done better and cheaper than could have been done by team."

J. B. Morgan,  
Blackstone, Va.

- o - o - o - o - o - o -

At \$2.50 per hour the cost was \$1.00 per acre.

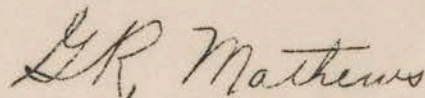
For at least fifteen years the Virginia Agricultural Extension Division has been assisting farmers with their soil erosion problems. For the most part homemade terracers pulled by farm teams were used to demonstrate how terraces should be built. Obviously this was a very slow method considering the great need of a large part of the state. It was simply impossible to keep the light weight terracers in place and to do good work in hard dry ground. If much extra weight was added the team could not pull it.

Lack of adequate power was a great handicap. Even if tractors were available they were generally of the wheel type and would stall on the loose terrace bed. The terracing unit we expect to keep in Nottoway county consists of a 35 horsepower Caterpillar tractor. Plenty of power for this job.

The #2 Caterpillar terracer has sufficient weight to hold it true to the terrace line. The nine foot steel blade on average slopes can build a 20 foot terrace in four round trips.

Considering the much better and more permanent construction, the very much greater speed, and the fact that the farmers' men and teams will be spared this tough job it is perfectly safe to say that terraces can be built better and cheaper with this terracing outfit than with men and teams. Application blanks are in the county agent's office. Speak to him about the number of acres you want terraced the next time you are in his office.

Yours very truly,



G. R. Mathews,  
County Agent

COOPERATIVE EXTENSION WORK  
IN  
AGRICULTURE AND HOME ECONOMICS  
State of Virginia

Va. A. & M. Col. & Poly. Inst.  
& the U.S.D.A.  
Cooperating

EXTENSION SERVICE  
COUNTY AGENT WORK

Blackstone, Virginia  
October 23, 1934

Dear Sir:

"October 10 the terracing unit was used to build four terraces (6000 feet) on my farm. These terraces will protect 16 acres. I paid for this service at the rate of \$2.50 per hour. It took  $10\frac{1}{2}$  hours. The cost was \$1.64 per acre.

"This field has been in a four year rotation. During the one-year periods it is in a clean cultivated crop such as tobacco; more than half the fertility gained in the three year periods it has been in cover crops has been washed away."

Walter L. Powell

The Bureau of Chemistry and Soils, U. S. Department of Agriculture, has found by analyzing nearly 400 samples of soil taken mostly from the Southern States that \$200,000,000 worth of nitrogen, potash and phosphoric acid are washed out of the soil each year. No estimate is made of the loss of other important elements, humus, bacteria, moisture, etc. This bureau found, too, that about 21 times as much plant food washes out of the soil each year as an average crop takes up in the same period.

The above figures are facts. We would be in a terrible plight if nothing could be done about it. But fortunately the simple broad base ridged terrace will, in a large measure, save the situation.

The farmers of Nottoway county were given an opportunity to see the efficient terracing unit work at Twin Lakes Exposition, and at the farms of Mr. Chapin, J. B. Morgan, J. T. Walker, G. L. Hammock, Waverly Hurt, Walter Powell, and W. S. Green, during the last two weeks. This terracing unit is now in Campbell county and will be in Halifax county next week. Both of these counties are considering the purchase of such a unit.

An average of 161 estimates, including county agents, farm real estate associations, National Farm Loan Associations and farm mortgage associations, give \$8.54 as the increased value of an acre of land after it has been terraced. The average cost of terracing on the above mentioned places in Nottoway county did not exceed \$1.50 per acre. What better investment could you make during these times?

Enclosed with this letter is an application blank on which please state the approximate number of acres you would have terraced within twelve months if we arrange to get the terracing outfit for Nottoway county. The total number of acres on the order blanks will decide whether or not we will get one of these units. You need not make a deposit at this time.

Yours truly,

*G. R. Mathews*  
G. R. Mathews, Co. Agent



COOPERATIVE EXTENSION WORK  
IN  
AGRICULTURE AND HOME ECONOMICS  
State of Virginia

Va. Agr. & Mech. Col.  
and Poly. Inst. and  
U. S. D. A., Cooperating

EXTENSION SERVICE  
COUNTY AGENT WORK

Blackstone, Virginia  
October 29, 1934

Dear Sir:

"October 13 I had the terracing unit build terraces on a ten acre field. I think the job was done better and cheaper than I could have done it with my team and tools.

"For ten years I have tried to improve this field but the fertility has washed away as fast as I could get it on the land. I think the terraces will prevent this.

"I want more work done and will support any good plan to get this terracing outfit for Nottoway county. Erosion is one of the greatest problems in our section and I am truly hopeful that the county authorities and leading farmers will work out a plan whereby this service will be available."

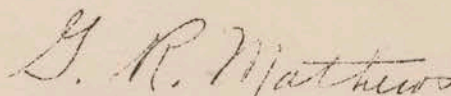
W. S. Green,  
Burkeville, Virginia

A large number of Nottoway farmers feel just like Mr. Green docs. They want this work. It is essential if we are to continue to farm, and it is very reasonable in cost.

In the last letter you received an order blank. A large number of these have come back to this office. If you haven't already sent in your order, please do so right away. Nottoway must have this outfit and your support is needed. If, through your help, this terracing unit is secured, you will take pride in knowing that your cooperation was responsible for Nottoway county taking one of the most important steps in its agricultural history.

Send your order in now for as many acres as you can have terraced in the next twelve months. Don't put off doing this.

Yours very truly,



G. R. Mathews,  
County Agent

COOPERATIVE EXTENSION WORK  
IN  
AGRICULTURE AND HOME ECONOMICS  
State of Virginia

Va. Agr. & Mech.  
Col. & Poly. Inst.  
and U.S.D.A. Coop.

EXTENSION SERVICE  
COUNTY AGENT WORK

Rustburg, Virginia  
October 10, 1934

Dear Sir:

At a meeting of some of the progressive farmers of Campbell County held at the Court House September 18 the following men were appointed to serve on the Campbell County Soil Erosion Control Board:

C. B. Peagans, Chairman, Rt. #3, Lynchburg, Va.  
H. P. Evans, Concord, Virginia  
Vernon Williams, Leesville, Virginia  
J. A. Hilton, Box #553, Lynchburg, Va.  
E. H. Barksdale, Brookneal, Virginia

Other committees were appointed to select farms on which to hold terracing demonstrations. The places and dates selected are--

October 17 - E. H. Barksdale, Brookneal, Va.  
October 19 - Willie Tanner, Gravel Ridge, Va.

Campbell County is one of the worst washed counties in Virginia and practically every farmer in the county should get out to see this efficient terracing unit work. The outfit will be working all day on the above dates but about 1:00 P. M. will probably suit most of you best.

This is the same kind of equipment now being used in many Southern states. Twenty units are working in nine counties in Alabama. Five are working in Tallapoosa County, Alabama. Your land needs terracing. You know that. Your county agent and the Blacksburg specialists are extremely busy. This seems your best chance to get this big job done. Come to at least one of these demonstrations and let us explain the plan to you. Briefly, the county or your committee will own the equipment and you get the terracing done at cost. Mr. J. B. Morgan, Blackstone, Virginia, had twenty acres terraced last week and stated that the job was better and cost less than he could have done it himself.

I am Expecting to see you either at Mr. Barksdale's or at Mr. Tanner's,

Yours very truly,



Charles Ellis,  
County Agent

#15938

ORDER FOR CONSTRUCTION OF TERRACES

THE CAMPBELL COUNTY TERRACING CLUB of Campbell county is hereby ordered to construct terraces on \_\_\_\_\_ acres of land owned by \_\_\_\_\_ (Name of land owner) of \_\_\_\_\_ (Community) and located \_\_\_\_\_ (Miles) from \_\_\_\_\_ (Known Point) on \_\_\_\_\_ highway.

\_\_\_\_\_ (Name of land owner) agrees to pay \$2.50 per hour for the con-

struction of terraces on the above described land in the following manner: Payment is to be made on completion of the job, or weekly if more than one week's time is required, to a representative of the CAMPBELL COUNTY TERRACING CLUB authorized to collect such funds, for work performed.

A deposit of \$ \_\_\_\_\_ accompanies this order to bind this contract and will be refunded on completion of the construction of terraces provided the undersigned is not indebted to the CAMPBELL COUNTY TERRACING CLUB or will be forfeited in event the work cannot be completed for reasons under the control of or caused by the undersigned.

Signed: \_\_\_\_\_

Address: \_\_\_\_\_

Accepted:

CAMPBELL COUNTY TERRACING CLUB

By \_\_\_\_\_

MEMBERSHIP TERRACING AGREEMENT  
OF THE  
HALIFAX TERRACING ASSOCIATION, INC.

Agreement of \_\_\_\_\_ P. O. Address \_\_\_\_\_

This agreement between the Halifax Terracing Association, Inc., hereinafter called the "Association", and the undersigned, called the "Member", witnesseth:

1. The undersigned hereby applies for membership in the Association and upon acceptance of this agreement by the Board of Directors becomes a Member of the Association. Upon signature by the Secretary of the Association, this agreement becomes a Certificate of Membership in the Association, and is NOT transferable.

2. The Member hereby contracts with the Association to construct terraces for him on \_\_\_\_\_ acres or more of land owned by him and located in the \_\_\_\_\_ community and located \_\_\_\_\_ miles from \_\_\_\_\_ (known point) on the \_\_\_\_\_ highway.

3. The Member grants the Association full and complete authority to lay out the terraces and construct them properly to prevent erosion of the land covered by this agreement.

4. The Member and the Association agree that no terraces will be constructed on land having a slope greater than 15 per cent.

5. The Association agrees to lay off and construct the terraces under the supervision of the Agricultural Agent of Halifax County in accordance with the instructions of the Extension Agricultural Engineer of the V. P. I. Agricultural Extension Division.

6. The Association agrees to have the terraces laid out by a competent agricultural engineer and to construct the terraces under his direction. The Association also agrees to provide the necessary equipment and machinery for laying off and building the terraces and to supply the engineer and operators of the terracing machinery.

7. The Member agrees to provide such other assistance in the form of labor and materials as may be requested of him by the engineer in charge and/or the County Agricultural Agent.

8. The Member agrees to complete in accordance with the instructions of the Association engineer such cuts and fills and terrace outlets as are laid out by him and to follow his instructions for protecting the terraces and terrace outlets.

9. The Member agrees to pay the Association for the construction of these terraces at the rate of not to exceed \$3.00 per hour spent by the terracing unit of the Association in constructing the terraces. The Member further agrees to make payment to the authorized representative of the Association immediately upon completion of the work, or weekly for work performed if more than one week is required to complete the job.

10. The Member deposits herewith with the Association \$5.00 to bind this contract and apply toward the payment for the terracing work. The Member further agrees that this deposit will be forfeited to the Association in the event that the work covered by this Agreement cannot be completed by the Association for reasons under the control of or caused by the Member.

IN WITNESS WHEREOF, the parties hereto have affixed their signatures as of the day and year written below.

HALIFAX TERRACING ASSOCIATION, INC.

Member \_\_\_\_\_

P. O. Address \_\_\_\_\_

Witness \_\_\_\_\_

\_\_\_\_\_  
Secretary

\_\_\_\_\_  
Date

