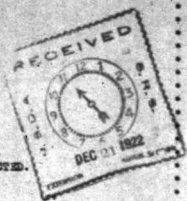


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Virginia
Agricultural Engineering
Chas. H. Seitz
Annual Report 1922

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REPORT
of
EXTENSION WORK CONDUCTED.

by the

DEPARTMENT OF AGRICULTURAL ENGINEERING, V.P.I.

July 1, 1921 - October 31, 1922

Blacksburg, Virginia.

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Project 10 -

REPORT
of the
EXTENSION WORK CONDUCTED

by the

DEPARTMENT OF AGRICULTURAL ENGINEERING, V.P.I.

July 1, 1921 - October 31, 1922

From July 1, 1921 to June 30, 1922 the Department of Agricultural Engineering was organized on the following basis: Charles E. Seitz, Head of Department, on full time Extension; John S. Glenn, Assistant Agricultural Engineer, six months Extension time, and six months college time; Henry B. Boynton, Assistant Agricultural Engineer, six months Extension time and six months college time; Miss E. F. Hughes, secretary and draftsman, full time Extension. Beginning July 1, 1922, the following apportionment of time was in effect: Charles E. Seitz, three months Experiment Station, three months college, and, six months Extension time; John S. Glenn full Extension time; Henry B. Boynton - six months Extension and six months college time; James A. Waller, instructor in power farming, on full time college; and R. J. Hubbard, assistant instructor, on full college time. A V.P.I. student is employed on the hour rate basis for drafting work, such as making tracings for farm building plans, etc.

This arrangement will make it possible to develop all three branches of the work, i.e. Extension, Resident Instruction, and Research. The Extension work has been handicapped in the past in that there has been no resident instruction or research work to look to for information.

In regard to number and variety of demonstrations, number of people assisted, and results, this has been the most successful year of the Extension work in Agricultural Engineering. 3,497 people were actually met or visited and 4,638 people addressed during the year.

Projects:

Demonstrations were conducted under the following projects during the year: (1) Drainage, (2) Terracing, (3) Farm Power and Machinery, (4) Boys' Agricultural Club Short Courses, (5) Farm Hydro-electric Power, (6) Water Supply and Sanitation, (7) Farm Buildings and Farmstead Planning, (8) Miscellaneous.

HEADQUARTERS WORK.

Projects in agricultural engineering are such that they necessitate considerably more headquarters work than is the case with most projects under other departments. The nature of the work naturally calls for field surveys which necessitate maps being drawn up in the office. The design and drawing of building plans take considerable time and investigation in the office. Practically every farm engineering problem is essentially different which means additional office work. Other departments of the

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Extension Division are constantly calling upon this department for estimates, plans, designs of new buildings, etc. which takes up a great deal of time. The head of the department put considerable time on headquarters work and devoted much time to working up a curriculum in agricultural engineering for the college and other detail college work. To counteract this Mr. Glenn put in 96 days on Extension work out of the 186 days that he was employed by the college.

Project Filing:

A project filing and follow up system has been instituted in the office whereby all of the work done on any specific project is recorded on project sheets - additional data collected from time to time on this project is added to the sheet so that definite information can be collected over a period of years showing the success of the project. All follow up data is recorded on the project sheet.

Publicity:

While the time spent at headquarters has been so taken up with detail work on projects, not very much time has been spent on publicity. However, eighteen articles have been written for county papers and farm journals. Reports on courses conducted in farm power were sent out to the eighty-three farm power equipment companies cooperating with the department. A half page in the Extension News has been assigned to the department and each month this is filled with agricultural engineering information.

Letters Written:

4,002 letters were written from the office in reply to letters of inquiry, etc. from farmers and others.

Drafting:

137 signs, posters, and sketches, were drawn up for the various extension departments for exhibits, etc.

34 farm building plans and maps were drawn.

32 tracings were drawn.

38 tile drainage maps were drawn.

4,855 blue prints of plans, maps, and posters were made.

2,501 bulletins on agricultural engineering subjects were mailed out to farmers upon request.

904 farm building plans were mailed out to farmers upon request.
125 people visited the office for information.

65 farm building plan booklets consisting of 60 farm building plans each, were sent to each county agent and each district agent. These represent 60 tracings and 3,500 blue prints.

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DRAINAGE PROJECT.

Regardless of the almost prohibitive freight rates on drain tile, the department has received a large number of requests for assistance and advice on drainage. While the large amount of work done on other projects has a necessarily restricted the number of drainage demonstrations, at the same time very satisfactory progress has been made with this project.

During the year 114 farmers were given personal assistance and advice on the drainage of 4,640 acres of land and 33 farmers were given advice through correspondence. Most of the land examined was in cultivation but due to the wet nature of the soil only a part of a crop could be raised during the average season. On 74 of these farms only preliminary surveys were necessary as the drainage problems were simple. For a comparatively small cost per acre, the wet land on these 74 farms consisting of 3,345 acres could be increased in productive value at least \$10.00 per acre annually by drainage. In other words, \$33,450.00 would be annually added to the productive value of the land thru drainage. On the other 40 farms, complete surveys were made and drainage maps prepared for 1,295 acres of wet land. This land needs complete drainage systems which will cost approximately \$50.00 per acre. The increased productive value will amount to at least \$20.00 per acre; or an increased productive value of \$25,900.00 annually on the 1,295 acres. 165 drainage bulletins were mailed out to farmers upon request.

A number of farmers have completed their drainage systems and others are planning on going ahead with their work this winter.

A TYPICAL DRAINAGE PROJECT.

Probably the most interesting piece of work accomplished under this project was the tile drainage system laid out for Mr. L. E. Myers, Route No. 1, Richmond, Virginia, in 1921. Mr. Myers is a small truck farmer specializing in raspberries. He tile drained 12 acres of land which had a stiff clay subsoil and a clay loam top soil. The tile in this system was spaced 30 feet apart and 2½ feet deep. This is 30 feet closer than is generally the practice and consequently doubled the cost over the average spacing of 60 feet. The system cost him approximately \$1200.00 or \$100.00 per acre. On six acres of the twelve acres tiled he has been raising raspberries for a number of years. Last year, which was a wet year, he raised 7,093 pints of raspberries on this six acres. This was about the average yield for wet years. This year (1922) the crop season was the wettest season experienced in years and most of the farmers had heavy losses from excessive moisture. In spite of this Mr. Myers raised 18,302 pints of raspberries on the six acres, or 187% more than the year before he drained the land. He received \$2,850.00 for the crop. Had the land not been drained he would certainly not have raised more than 7,090 pints and in all probability much less. The 7,090 pints would have brought him \$1,099.41. In other words, he netted on the six acres \$1,750.59 above the preceding year, or \$1,150.69 above the cost of draining the six acres, or \$550.59 above the cost of the entire drainage system of 12 acres.

Mr. Myers made a special trip to Blacksburg during the Farmers' Institute to tell us of the wonderful returns he has gotten from his investment in

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drainage. He stated that had he tilled his farm ten years ago he would have had at least \$5000.00 more to his credit in the bank.

Most of the neighboring farmers told him he was crazy to bury so much money in the land but now they are convinced of the value of proper drainage. As a result of this demonstration five of these same neighbors have ordered tile.

TERRACING PROJECT.

Terracing has been made one of our main projects this year. Demonstrations were conducted in the following Southern Piedmont Counties - Amelia, Charlotte, Binwiddle, Greenville, Halifax, Lunenburg, Mecklenburg, Nettoway, and Prince George. In these counties the need of terracing to prevent soil washing is very evident. Thousands of acres are annually washed away as a result of soil erosion. This represents a tremendous economic loss to these counties and to the state. Most of this loss can be prevented by the use of terraces.

During the fall of 1921 the first extensive terracing demonstrations were conducted with the county agents in each of the above counties. A week was spent in each county, one demonstration being conducted each day. A typical field was selected for such demonstration and a complete terracing system was staked out and one complete terrace constructed, in order to show the farmers how to proceed with the work. A homemade terracing drag was built by the engineer in most cases. At a few demonstrations, local implement dealers cooperated by furnishing a tractor and terracing ditcher. In all cases it was demonstrated that terraces could be constructed with homemade equipment and teams.

Great interest was taken in these demonstrations in all sections, and an average of eight farmers attended each demonstration. In one county an influential farmer and lawyer made the statement that he believed that it was the greatest work done by the Extension Division in his county and that the value of the work to the county could not be overestimated. During the summer and fall of 1922 an inspection was made of all terraces constructed the previous year and advice given in regard to maintenance. New demonstrations were also started in these counties.

Seventy-five terracing demonstrations were conducted and 335,060 feet, or 63 miles of terraces were laid out on 1,230 acres of land. 558 farmers attended these 75 demonstrations. It can be conservatively estimated that the land terraced was increased in productive value at least \$10.00 per acre or \$12,300.00 for the 1,230 acres. In each county where demonstrations were held, the county agent has been called upon to do a great deal of terracing for the farmer, showing that the demonstrations have been a great success.

A TYPICAL TERRACING PROJECT.

The terracing project handled on the farm of Mr. E. W. Rowlett of Amelia County, can be termed a typical project as Mr. Rowlett is a typical

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farmer with no better equipment for the work than his neighbors; and as the field terraced was a typical field in that section having been greatly damaged by sheet washing as well as by gully washing.

The terraces were laid out on September 20, 1921 on a 10-acre field but due to a drought at that time the model terraces could not be constructed, but the methods of throwing up the terraces were explained to him in detail. Mr. Rowlett built the V-drag himself and after a rain in October he started the construction. He spent ten days with two teams and two men throwing up the 7,400 feet of terraces laid out and built the terraces to the required height and width.

During the month of September 1922, a visit was made to Mr. Rowlett's farm to inspect the terraces. It was learned that the terraces had carried the water off the field as was planned, against the belief of Mr. Rowlett's neighbors who believed the terraces were running up hill. Mr. Rowlett says that they are of inestimable value to his field as they have completely stopped the washing, and that his neighbors have been won over to this method of stopping soil washing.

FARM POWER AND MACHINERY PROJECT.

The constantly increasing use of power equipment on the farms of the state make it imperative that the farmers of the state be given an opportunity to learn how to select, care for, and repair, this equipment. This department is endeavoring to give the farmers this opportunity. By conducting short courses and demonstrations along power farming lines we are reaching a large number of farmers.

Six farm power short courses were held during the year with a total attendance of 262. Intensive instruction was given in the construction, operation, care and repair of farm implements, gas engines, tractors, water systems, and lighting plants. Numerous inquiries have been received from farmers in regard to farm power problems and advice was given in each instance.

2 The short courses held were as follows:

Agri. High School Teachers of State - Summer 1921 - 6 day course - 50 attend.	
Rehabilitated Soldiers - - - - - " 1921 - 12 " " " 16 "	
Farmers Short Course - - - - - " 1922 - 12 " " " 14 "	
Agricultural High School Teachers - - " 1922 - 12 " " " 14 "	
Rehabilitated Soldiers - - - - - " 1922 - 6 weeks " " 34 "	
Delco Light School - - - - - Feb. 1922 - 2 days " " 82 "	

Six farm power demonstrations were conducted during the year with a total attendance of 2,190 farmers. At these demonstrations, power equipment was shown in operation doing various lines of work. Great interest was shown by the farmers at these demonstrations.

The demonstrations held were as follows:

Farm Power Demonstration - Farmers Institute, V.P.I. 1921 - 2 days - 600 attended.

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	attendance
Farm Power Demonstration- Fearisburg High School-V.P.I.-1921- 1 day - 25	
Delco Light Demonstration - V.P.I.,	1922- 2 days-200
Farm Power Demonstration -Farmers Institute-V.P.I. -	1922- 2 days-600
Semi-centennial - 1922 - - - - -	1 day -500
Fordson Disc Plow Demonstration - V.P.I.	1 day - 16

Eighty-three farm equipment companies cooperated with this department in the farm power project by loaning equipment. This equipment is housed in the new farm machinery building which is 80' by 160' in size. 1200 visitors inspected the machinery in our laboratory during the year.

One of the most important pieces of work accomplished under the farm power project was the two weeks intensive short course given to the Agricultural High School Teachers of the State. These teachers are able to reach a large number of boys throughout the State and pass on the information they received in the short course.

BOYS' AGRICULTURAL CLUB SHORT COURSE PROJECT.

This department is cooperating very closely with the Boys' Club Department in handling the Boys' Club short courses. At each of the Boys' Club short courses in 1921 and 1922 we assigned from one to two men from the department to give instruction in farm mechanics. Arrangements were made with the farm equipment dealers to supply machinery, etc. for each course. At the State Short Course held at V. P. I. the equipment in the Farm Machinery Laboratory was used.

At all courses instruction was given in farm machinery, gas engines, and tractors, lighting plants, water systems, concrete construction, rope tying and splicing, and radio. This department secured the use of a large 3 ton I.H.C. truck for the 1922 courses. This truck was used to transport equipment and men from one course to the next. The truck made it possible to get the camp equipment from course to course on time which could not have been done had we relied on railroad transportation.

The department feels that Boys' Club instruction is becoming one of our most important projects. All of the boys take an intense interest in the work. When required to enroll in certain courses, at least two thirds of the boys select the farm mechanics course in preference to all others. Numbers of the boys at the courses voluntarily tell us that they have gotten a great deal out of the course and feel amply repaid for attending.

Ten club courses were held covering forty one days of instruction. The average length of each course was four days. The total number of boys instructed was 782. The following shows the courses held with the number of boys taking farm mechanics:

(see next page.)

Boys' Club Short Courses.

State Club Short Course - V. F. I.	1921 - 4 days - Attendance -	127
Boys Club Short Course - Petersburg	1921 - 4 days - "	54
Boys " " - Fredericksburg	1921 - 5 days - "	147
Boys " " - Bridgewater	1921 - 4 days - "	48
State Club Short Course - V. F. I.	1922 - 4 days - "	140
Boys Club Short Course - Petersburg -	1922 - 4 days - "	104
Boys " " - Ivy	1922 - 4 days - "	52
Boys " " - Fredericksburg	1922 - 4 days - "	57
Boys " " - Bridgewater	1922 - 4 days - "	35
Boys " " - Rockbridge	1922 - 4 days - "	36

The most outstanding piece of Extension work accomplished under this project was probably the instruction given in farm mechanics at the State Club Short Course at V. F. I. In these courses the department used the equipment in the Farm Machinery Laboratory. The boys were given lectures and practical instruction in the laboratory on this equipment which consisted of farm implements, gas engines, tractors, lighting plants, water systems, and trucks. In addition to this work they were instructed on rope tying and splicing, farm concrete construction, and radio. A tractor demonstration was given on the morning of the last day and each boy was given an opportunity to operate each of the six different makes of tractors in the field. Out of the 222 boys attending the short course, 140 enrolled in the farm mechanics course.

FARM HYDRO-ELECTRIC POWER PROJECT.

The object of water power development is to demonstrate to the farmer the dormant possibilities of the average small stream; and to show him how to harness this wasted power at a small cost for his profit and for the increased convenience and comfort of himself and family.

There are in the State of Virginia thousands of small streams, some located in each county, which, when considered individually seem useless as producers of power, but when considered collectively represent an enormous waste of power. These streams, once harnessed, will generate power almost indefinitely and at negligible expense to the owner. The power will be of inestimable value when considered in terms of the comforts and joys it brings to the farm home, as well as the saving in time and man labor.

These streams vary in size from the tiny stream of the steep mountainside capable of developing a fraction of a horsepower, to the larger streams, capable of developing 25 or 30 horsepower. As an example, a stream in the mountain section of Virginia, with a flow of fifteen to thirty gallons per minute was developed to furnish power for use in the home. By the use of a storage battery in connection with the installation it produced power sufficient for lights, electric iron, sewing machine, washing machine, electric fan, vacuum cleaner, ice cream freezer, coffee grinder, cream separator, water pump, pump, small automatic refrigerator, grinders, small shop machines, and

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many other labor saving devices. This outfit cost only \$450.00 installed. The power, if used continuously, and paid for at the city rate of ten cents per K. W. hour, would cost the user \$18.00 per month. When compared with the average city family's electricity bill of \$3.00 or \$4.00 per month, one can get some idea of the power that has been going to waste from even so small a stream. The only expense incurred from operating this plant is for lubricating oil, which amounts to approximately seventy-five cents per year.

Another plant, now under consideration for a stream heretofore considered useless as a source of power, can be installed to do such jobs as sawing wood, run milking machine, feed grinder, corn sheller, grain elevator, concrete mixer, electric range, hay hoist, and many other farm machines, as well as all household conveniences. This plant can be installed for approximately \$1100.00.

It might be added that the two plants mentioned above represent the average in cost in proportion to the amount of power generated.

During the year 61 surveys were made for hydro-electric installations. Of these five were discarded as impractical because of local conditions, such as scattered community or too great distance from point of consumption. The average stream surveyed will develop from one to three horse power, at an average cost of about \$500.00

Due to the increasing demand from farmers for assistance and information in re regard to small plants, the Department of Agricultural Engineering will endeavor to give all possible aid with the first installations in each community. When a call for aid is received, an engineer is sent to measure the stream and figure the available power, after which an estimate of the cost, including a list of the necessary equipment, is furnished to the farmer. If the owner then decides to carry out the work an engineer will make a few visits while the plant is being installed to give such assistance and advice as is needed to make the demonstration a success.

A TYPICAL INSTALLATION.

The installation of an hydro-electric plant on the farm of H. P. Givens was probably the most outstanding piece of work in hydro-electric development. Not alone because of the increase of comforts to a farm home, a neighbor's home, and a community church, but because of the influence it had on the demand for similar installations in the same section. This project is of particular interest for several reasons, - first; it was successfully installed in a community where another similar plant, owned and installed by a master electrician, had failed because of the lack of advice on hydraulic problems; second, it represents the smallest practical development of power from farm streams; and, third, it was a successful plant even though installed in opposition to the recommendations of the water wheel manufacturers; which means that originality has to be used in every phase of the work.

The survey was made in February 1922, at which time the flow of the spring was thirty gallons per minute. The spring is 1500 feet, and 135 feet above the

residence. An estimate on the equipment was then submitted to Mr. Givens who after careful consideration, decided to proceed with the work. By considerable correspondence, second hand two inch pipe and used copper wire were found at Camp ~~see~~ which greatly reduced the cost. The water motor, generator, storage battery, and switchboard instruments were then secured and everything gotten in readiness for the work.

When the equipment arrived, Mr. Givens was given assistance with the construction of an earth storage dam and the work on the pipe line was started. At intervals along the pipe line, the water motor was attached and tests made. Upon completion of the pipe line from the dam to the basement of the house the water motor was attached and set on a base in alignment with a 250 watt generator. The house was wired, the switchboard made and connected to the battery, and generator and everything made ready for belting the water motor to the generator. As the speed of the motor at full load could not be determined except by trial, the size of pulley for the generator was not known. A large walnut block was keyed on the generator shaft and chiselled into a pulley, by using the storage battery to run the generator as a motor. After several trials runs, the pulley was cut to the proper diameter and the plant was put into operation by the opening of the valve in the pipe line. The valve is so arranged that an extension stem can be fitted so that the plant can be started or stopped from the bedroom. The switchboard was constructed at a cost of about \$30.00. On the switchboard was installed a reverse current cut out to prevent the batteries running the generator as a motor in case the water motor should be slowed down for any reason.

This plant now supplies light and limited power to two farms and a community church. It cost only \$460.00 complete, installed, and the cost of operation is negligible.

WATER SUPPLY AND SANITATION PROJECT.

In response to the growing demand for water in the home, water supply campaigns have been put on in two counties with great success. In addition to the regular campaigns, assistance with water supply problems has been given to homes in many counties throught the state.

During the year 86 water supply surveys were made and advice given on the installation. In each case an estimate and list of materials was furnished. The plants ranged from the complete systems including pumping outfit, pipe, and bathroom fixtures, costing from several hundred to a thousand dollars; to the simpler system to relieve the kitchen drudgery, costing only a few dollars. It is with the latter type that the most effective work has been done. In many instances it was found that an expenditure of ten to twenty-five dollars for a few feet of pipe, a barrel and a kitchen sink would furnish running water for the housewife, who had no idea that she could enjoy such comfort without spending a large sum of money.

A WATER SUPPLY INSTALLATION.

(See next page)

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A WATER SUPPLY INSTALLATION.

Many interesting pieces of work on water systems were handled, but perhaps the most outstanding was the following project. This was interesting not because of mechanical difficulties but because of the owners hostility toward any improvements in the home. After a survey of the premises it was found that the housewife was walking 140 miles per year and expending enough energy in lifting water to do the work of two horses plowing eleven acres of land.

When asked if we could assist him with his water supply problem, Mr. Blank answered no, that he would soon die anyway and that he didn't want to spend any money. A son finally consented to expend fifty dollars toward putting water in the kitchen, if we would help install the system and 'make it work'. A small hydraulic ran with overhead storage, kitchen sink, and waste-pipe, were purchased for \$49.00.

When the equipment arrived, a demonstration was given on the installation and care of a run. It was attended by neighboring farmers and several members of the Home Economics Club. Mr. Blank contended that the outfit wouldn't work even up to the time that the run pumped the water into the tank. Since enjoying the comforts of water in the kitchen, he is now planning to take a hand himself and install both fixtures and all modern conveniences; and now, he is even considering the power development of a nearby small stream for electric lights and power. Since he has learned how to live he has decided to live a little longer.

Sanitation.

With practically every water supply installation, instruction and advice is given on the sanitary disposal of sewage. Plans are furnished by the department showing the details of construction, and instructions for building a septic tank to take care of the sewage. In some cases actual demonstrations are given in the field on this work but most of the activities along this line consist in furnishing instruction, plans, etc. The department cooperates with the State Department of Health along this line as they have a number of men in the field who give the farmers assistance on the actual construction of the septic tank. 244 bulletins and 70 plans on septic tank and sewerage systems have been furnished farmers who have requested them.

FARM BUILDINGS AND FARMSTEAD PLANNING PROJECT.

Farm Buildings.

The farm building projects as handled by this department this year can be put into three divisions - assistance thru our regular plan service, field assistance and personal service (where the regular plan service is not sufficient), and, farmstead planning. Up to this year, we gave building assistance to the farmer only thru our regular plan service. During this year we have

obtained some excellent results with our farm building projects which has been mainly due to the adding of the last two divisions of work.

To make our plan service more effective, plan booklets were made up and distributed to the county agents. This booklet shows the floor plan and elevation view of each barn for which we have plans. The farmers in each county desiring building plans may now refer to the county agents plan booklet to select the particular plan desired. Since these booklets were distributed the requests for plans have nearly doubled in number. 19 new plans have been drawn up to be added to the set of plans for distribution. 3 plans have been revised. 31 building plans have been drawn during the year. 113 farmers have been instructed on this project during the year thru correspondence.

A TYPICAL BUILDING PROJECT.

The planning and construction superintendence of the Apple Packing House constructed by the Harrisonburg Fruit Growers Cooperative Marketing Association may be termed a typical building project. Professional assistance in the design of this packing house, the first of its kind in the state, was greatly needed by the Association.

When assistance was asked for, a special trip was made by an engineer from this department and a member of the Horticulture Department to the fruit section of Pennsylvania to make a study of packing houses in use there. With this data a house was designed to fill the requirements of the Harrisonburg Growers. The complete working drawings, specifications, bill of material, were then drawn up, and the contract for construction let July 1st. During the construction visits were made to inspect the work and to authorize any changes needed. The building was completed the 15th of October, and was used in packing this year's apple crop. Complete cost accounts were kept of the whole project. The completed building and equipment cost \$10,000.00.

FARMSTEAD PLANNING.

Probably one of the most outstanding pieces of work accomplished under the farmstead planning project was the planning of the V. F. I. farmstead. \$10,000.00 was appropriated for the improvement of the V. F. I. farmstead. This department was given charge of the rearranging and planning of the farm buildings, fencing, etc. and the spending of this fund. A complete survey was made of the farmstead and all old buildings located. Plans were then prepared showing the proposed arrangement of buildings, fields, etc. Supervision was given by the department for all changes made. Before this project was started all of the buildings, fences, etc. needed paint and repair, and the place as a whole was a disgrace for a State Institution. The change in the appearance of the farm plant since the improvements have been made, is hardly believable. The whole arrangement is now a credit to any institution. Since the V. F. I. farm is inspected by thousands of visitors annually, this project will have a great influence.

MISCELLANEOUS PROJECTS.

The department receives a large number of requests each year from farmers, county agents, farm organizations, various departments of the college and Extension Division, and other state agencies for information, assistance, and advice on all sorts of engineering problems. A special endeavor is made to comply with all these requests in so far as they do not interfere with the main extension projects.

Assistance was given on miscellaneous problems, a few of which were as follows: construction of a fish pond, construction of several masonry dams for water supply, location and construction of a greenhouse, location of Childrens Home in Wythe County, laying out of orchards in Amherst and Botetourt Counties, inspection and advice on making tile at Glasgow, Virginia, advice on small refrigerating plants for farms, advice on construction of grain elevator, advice on construction of a country church, location and construction of a community house, location and construction of a school house, advice on refrigerating system to be used in apple storage houses. Estimates, specifications, and bills of material were worked up for many types of structures. Advice on farm conveniences of all types, painting of farm buildings, heating plants for farm homes, rural telephone systems, construction of lime kilns, lime grinding equipment for farm organizations, landscape architecture, cheese factories, and land clearing was requested. 364 letters have been received from farmers on the above and other miscellaneous subjects and in each case full information was given.

Agricultural Engineering Curriculum.

During the year a four year curriculum in agricultural engineering was worked up by the head of the department. This curriculum was adopted and is now offered in the college. Twenty-five men have enrolled for this four year course.

Cooperative Work.

The department cooperated with the following departments of the College and Extension Division in the furtherance of the Extension work: Dairy Department, in design of dairy barns; Animal Husbandry Department, in design of beef barns and hog houses; Poultry Department, in design of poultry houses and equipment; Horticulture Department, in design of sweet potato houses and apple packing houses; Home Economics Department, in water supply and home conveniences; Boys' and Girls' Club Department, in short course work. With the following along miscellaneous topics: Agricultural Department of the Norfolk and Western, Farm Bureau Federation, Experiment Station, Department of Agricultural Engineering, U. S. Department of Agriculture, Central State Hospital, State Farm, State School for Deaf, Dumb and Blind, Boys' Home at Covington, and Smith Hughes Schools, besides various farm equipment companies and dealers.

Fairs and Exhibits.

Department exhibits featuring various projects by means of models, etc, were made at the Farmers' Institute of 1921 and 1922, the V. P. I. Semi-centennial of 1922, and the Virginia State fairs of 1921 and 1922. At the State Fair this department

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had charge of the farm machinery exhibit. These exhibits were made entirely educational. Many exhibitors, who exhibit at all of the large Eastern Fairs, have made the statement that the farm machinery exhibit at the Virginia State Fair is larger and of a more educational type than that of any other eastern state fair. At the 1922 State Fair, in addition to the regular farm machinery exhibit, the Ford Motor Company put on an industrial and farm exhibit which was the biggest event of this years fair. This exhibit covered about five acres of ground, cost over \$15,000.00 to stage, and consisted of exhibits valued at over a million dollars. This was the largest exhibit of the kind ever shown in the South. This department was instrumental in getting this exhibit for the fair.

Out of the State Trips.

While on annual leave, the head of the department visited the agricultural engineering departments of the Oregon Agricultural College, University of Nevada, Nebraska State Agricultural College. He was commissioned by the Governor to represent the State of Virginia at the National Drainage Congress held at St. Paul, Minnesota. On this trip he visited the agricultural engineering departments of the Universities of Minnesota and Wisconsin, and the Experimental Engineering Department of the International Harvester Company at Chicago, Illinois. All three members of the department attended the annual meeting of the American Society of Agricultural Engineers held in Chicago. Two of the men were on their own expense. On this trip the Cement Laboratories of the Lewis Institute of Chicago was visited, and on the return trip the agricultural engineering department of the Ohio State University was visited as well as the tile plant of the Franklin Brick and Tile Company at Columbus.

Three trips were made to Washington to get information from the Division of Agricultural Engineering of the U. S. Department of Agriculture. A trip was made into Pennsylvania in company with a member of the Horticulture Department and a committee of apple growers from Rockingham County, to inspect some apple packing houses and get data for the design of a community apple packing house.

14. Report I.R. 1922

REPORT OF DAYS WORKED.
(16 months - 416 working days)

G. E. Seitz.

30 days annual leave.
3 days legal holiday.
5 days sick leave.
27 days on College and Experiment Station work.
65 days.

416 - 65 equals 351 days for work.

127 days was spent in the field.
224 days was spent at headquarters.

36% of time was spent in the field.

J. S. Glenn.

10 days annual leave.
2 days legal holiday.
166 days on College time.
168 days.

416 - 168 equals 248 days for work.

211 days spent in the field.
37 days spent at headquarters.

85% of time was spent in the field.

Henry B. Boynton.

7 days annual leave.
5½ days legal holiday.
166 days on College time.
169½ days.

416 - 169½ equals 247½ days for work.

150½ days spent in the field.
97 days spent at headquarters.

60.8% of time was spent in the field.

60.8% was average time spent in the field for members of the Department.

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SUMMARY OF RESULTS.

G. E. GRAY.

Number of drainage demonstrations given	43
Number of acres in drainage demonstrations	2,302 acres
Number of terracing demonstrations	5
Number of acres terraced in demonstration	165 acres
Number of feet of terraces laid out	61,250 feet
Number of water supply demonstrations given	7
Number of farmstead planning demonstrations	10
Number of counties visited	26
Number of county agents visited	15
Number of short courses	4
Number of meetings attended	51
Number of articles written for publication	18
Number of conferences attended	51
Number of addresses made	15
Number of people addressed	794
Number of people met or visited	1,480

J. D. GLENN.

Number of drainage demonstrations given	66
Number of acres in drainage demonstrations	1,863
Number of terracing demonstrations	27
Number of acres in terracing demonstrations	490
Number of feet of terraces laid out	119,200
Number of water supply demonstrations	86
Number of farmstead planning demonstrations	9
Number of hydro-electric demonstrations	57
Number of short courses at which instruction was given	6
Number of meetings attended	12
Number of counties visited	43
Number of county agents visited	29
Number of addresses made	28
Number of people addressed	1,687
Number of people met or visited	1,560

H. B. BOYNTON.

Number of drainage demonstrations	5
Number of acres in drainage demonstrations	475
Number of terracing demonstrations	43
Number of acres in terracing demonstration	575
Number of feet of terraces laid out	153,810
Number of water supply and sanitation demonstrations	2
Number of farmstead planning demonstrations	2
Number of farm building demonstrations (in field)	35
Number of hydro-electric demonstrations	4
Number of short courses at which instruction was given	10
Number of counties visited	27

16. Report A.R. 1922

H. E. ROYTON. (continued)

Number of county agents visited	20
Number of meetings attended	16
Number of addresses made	33
Number of people addressed	2,157
Number of people met or visited	657

GENERAL SUMMARY

Total number of drainage demonstrations	114
" " " acres in drainage demonstrations	4,640
" " " terracing demonstrations	78
" " " acres in terracing demonstrations	1,230
" " " feet of terraces laid out	333,060
" " " miles of terraces laid out	63
" " " farmers attending terracing dems.	566
" " " farm water supply and sanitation dems.	98
" " " farm buildings demonstrations (in field)	35
" " " farmstead planning demonstrations	21
" " " hydro-electric demonstrations	61
" " " farm power and machinery demonstrations	6
" " " Boys' Club short courses	10
" " " Boys attending short course	782
" " " Adult short courses	6
" " " men attending adult short courses	252
" " " Counties visited	74
" " " County agents visited	49
" " " addresses made	76
" " " people addressed	4,838
" " " people met or visited	3,497
" " " articles written for publication	18
" " " meetings attended	65
" " " letters written	4,002
" " " farm building plans drawn	32
" " " posters, etc. drawn	139
" " " maps drawn	26
" " " tracings drawn	70
" " " blue prints made	4,855
" " " farm building plans mailed to farmers	904
" " " bulletins mailed to farmers	2,501
" " " projects conducted thru correspondence entirely	364

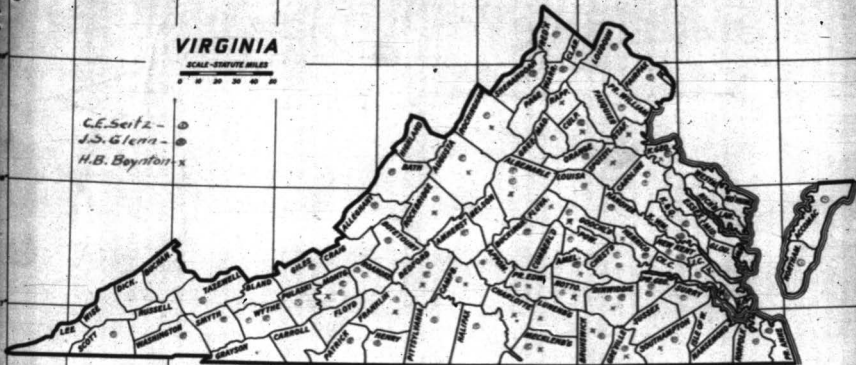
Total number of people reached thru demonstrations,
visits, and short courses 8,336

VIRGINIA

SCALE—STATUTE MILES



C.E. Seitz - ⊙
J.S. Glenn - ⊙
H.B. Boynton - x



Counties Visited by Members of Agr. Eng. Dept.
(July 1-21 to Nov. 1-22)