1953

Annual Report of the Clemson Board of Trustees, 1953

Clemson University, Board of Trustees

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SIXTY-FOURTH ANNUAL REPORT

of the

BOARD OF TRUSTEES

of

THE CLEMSON AGRICULTURAL COLLEGE

to the

GENERAL ASSEMBLY OF SOUTH CAROLINA

1953

RECORD

The Clemson Agricultural College

Published quarterly by The Clemson Agricultural College, Clemson, S. C.
Entered as second class matter April 25, 1905, at the Post Office at
Clemson, S. C., under the Act of July 16, 1894, now superseded
by the Act of August 24, 1912.
LETTER OF TRANSMITTAL

Members of the General Assembly
Columbia, South Carolina

Gentlemen:

In behalf of the trustees of The Clemson Agricultural College, we are pleased to transmit herewith for your consideration the report of President R. F. Poole for the fiscal year July 1, 1952 to June 30, 1953.

The Clemson College Board is well pleased with the operation of the college as well as its several agencies.

Respectfully submitted,
R. M. Cooper
President, Board of Trustees

December 1, 1953
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REPORT OF THE PRESIDENT OF THE COLLEGE

From R. F. Poole
President, The Clemson Agricultural College

To The Honorable Robert M. Cooper
President, The Board of Trustees

I have the honor to present to you the sixty-fourth report of the President of Clemson College. In addition to the reports of the public service activities, I am including short statements regarding the activities of the various schools and departments of the college.

The Registrar's Office shows that there were 2764 students enrolled in the first semester of 1952-53 and a total enrollment of 2956 for the year. Thus far in the session of 1953-54, 2749 students have been enrolled.

Graduates awarded degrees during the year 1953 were as follows: School of Agriculture 105, School of Arts and Sciences 41, School of Chemistry and Geology 8, School of Education 44, School of Engineering 163, School of Textiles 116.

Master of Science degrees were awarded as follows: Animal Husbandry 1, Agricultural Economics 2, Entomology 1, Education 8, Vocational Agricultural Education 7, Physics 1, Chemistry 1, Civil Engineering 1, Mechanical Engineering 1, Textile Chemistry 1.

Enrollment first semester 1953-54 includes 2675 undergraduate students who are majoring in the various schools as follows: Agriculture 494, Arts and Sciences 204, Chemistry 29, Education 242, Engineering* 431, Textiles 575. This year the enrollment includes 80.8 percent from South Carolina, 13.6 percent from other southern states, and 5.6 percent from other sections of the nation; and 12 from 8 foreign countries.

* Includes 133 students majoring in Agricultural Engineering, which is jointly administered by the School of Agriculture and the School of Engineering.
WHERE THE CLEMSON STUDENTS COME FROM
FIRST SEMESTER 1953-1954

SOUTH CAROLINA 2221
NORTH CAR. & GEORGIA 13
OTHER SOU. STATES 143
OTHER STATES 96
TOTAL ENROLLMENT 2749

SOUTH CAROLINA 80.8%
OTHER SOU. STATES 13.6%
OTHER SECTIONS 5.6%
The Registrar's Office made many improved procedures during the year and stabilized others of the past few years, including the keeping of the permanent records of all students with IBM machines, thus greatly facilitating the work.

Some activities of the office other than statistical included: Helping to co-ordinate placement activities which are handled by the several schools; handling the enormously increased security and educational checks on Clemson men in connection with their employment in government service and the Armed Forces; sending copies of each freshman's record to his high school principal; making special studies of academic problems for various offices and organizations of the college; preparing leaflets, bulletins, and catalogs of the college; arranging for several groups of high school seniors to visit Clemson; and similar special services.

The Department of Military Science and Tactics has had a continuous increase in the strength of the Army R.O.T.C. during the period 1946-52. Under official agreements, the 1952-53 freshmen enrollment was divided on a 50-50 basis between the Army R.O.T.C. and the Air Force R.O.T.C.

The overall general efficiency of the department was at a high level during the year, due largely to experienced personnel. On November 25, 1952, Major General Charles D. W. Canham, Deputy Army Commander, Third Army, after inspecting the Corps of Cadets, said: "Your unit's courtesy and discipline are among the best I have observed in the Third Army area."

The aims and objectives of the Military Department are: To co-ordinate the progress of the Air Force and Army R.O.T.C. units; to assist the college authorities in administration and discipline of the Corps of Cadets; to develop in all cadets the characteristics and attitude of leadership to better fit them as useful citizens; to train college students as junior officers toward their progressive development as officers, especially in the Organized Reserve Corps and the National Guard; to instill in each cadet a sense of duty and responsibility to his home, his country, and his God.
The School of Agriculture enrollment remains at a high level. There is a strong demand for graduates in this field, and all capable graduates have no difficulty in securing desirable positions.

This School has been very fortunate in having the outstanding services of Visiting Professor F. M. Simpson, retired director of agricultural research for Swift and Company, Chicago. Professor Simpson's course in marketing livestock and meats has been very popular, and he has been instrumental in placing a number of graduates in excellent positions. As a member of the U. S. Chamber of Commerce Agricultural Committee, his associations with men in industry and business have resulted in valuable contacts for the College.

The short course in agricultural credit, under the Mutual Security Agency, held last summer provided instruction and field visits for 28 high-ranking officials in agricultural credit programs in seven foreign countries. As an outgrowth of this successful course, three regular students were sent to Clemson for instruction in agricultural credit, one from Thailand, and two from Formosa—university graduates holding responsible positions with their respective governments.

A very successful six weeks' course was conducted in the use of fertilizer and lime under the Mutual Security Agency program. Ten well trained specialists attended this course, seven from Yugoslavia, two from Denmark, and one from the Philippines.

A committee from the Engineers' Council for Professional Development (ECPD) inspected the Agricultural Engineering Department in April for accreditation. The joint administration of the agricultural engineering curriculum makes this department eligible for accreditation by the ECPD, and this has been granted.

During the six-year period March 31, 1947-February 7, 1953, fourteen six-day short courses have been given by the Dairy Department for artificial insemination technicians with 204 men enrolled. These trained technicians operate the 15 county co-operative breeding associations now using the semen from the Clemson bull stud. The Dairy Department also held three five-day butterfat testers' short courses, and 48 persons received certificates in butterfat tester's training.
There is a marked increase in student interest in poultry husbandry. Since 1949, fourteen students have graduated in this course. The income from poultry products exceeds that from other livestock commodities in the state, and it seems evident that this industry will continue to be one of the leading cash income enterprises in the field of animal production.

Other items worthy of note include: (1) The large enrollment in animal husbandry courses, 285 students having been enrolled in the Animal Husbandry Department; (2) The successful graduation of 22 students in agronomy majors during the college year; (3) The visit of Dr. H. R. Albrecht, High Chancellor of the National Alpha Zeta Horticulture Fraternity, to the Clemson Alpha Zeta chapter and his compliment that it is one of the most active chapters in the nation. The Clemson chapter sponsors the Clemson Agricultural Fair and the publication of the School of Agriculture’s student magazine, The Agrarian.

The School of Arts and Sciences, with most departments appropriately staffed, had a very successful year. All departments have been busy, not only with routine duties but with supplementary efforts to improve and progress.

There is a general feeling among the staff that scholarship among the students has been noticeably better during the year, following several years of declining academic achievement.

The staff has continued to be increasingly active in extracurricular professional work. For instance, Dr. L. D. Huff, Head of the Physics Department, had a distinctive opportunity in being selected to participate in the National Science Foundation-sponsored conference to discuss research in physics. Various Arts and Sciences staff members appeared on programs at meetings of professional organizations and some are serving as officers in these organizations. A good many have published articles in professional journals. All but three of the staff members hold membership in learned societies in their fields. All this indicates healthy voluntary professional activity.

In the graduate field, the School of Arts and Sciences offers graduate courses in mathematics and cooperates in various ways, espe-
cially through the English Department, with the Graduate School.

With a new “crop” of Ph.D.’s the staff of the school now has 17 members with that degree, 43 members with the M.S. degree and some work towards the Ph.D., with only one member having just a Bachelor degree.

There is continued enthusiastic response to this school’s booklet —Help! Help? Help.—designed to create in high school students greater interest in better preparation for college. Requests have come from 33 states for the publication, which seems to have made a justifying contribution to pre-college training.

Members of the Social Sciences Department have in progress five research projects dealing with some phase of the social, political, and economic history of South Carolina. When completed, these studies will be contributions to the knowledge of the state.

The School of Education recognizes the hidden challenge of providing qualified teachers for positions paying salaries often below those for occupations in industry. As the proportion of veteran students to regular cadets decreases, the change is reflected in the students who are preparing to be teachers.

The 1952-53 session was marked by several matters of more than ordinary interest. These include: (1) The election of Professor J. B. Monroe to the vice-presidency of the Southern Regional Workers in Vocational Agriculture; (2) The fact that Dr. T. A. White’s “Introduction to Educational Research” continues to add to the potential of those who do graduate research and complete theses; (3) The graduate program under Professors J. L. Brock and J. B. Gentry, which is continuous and increasing; and the challenging work of Professor L. R. Booker in graduate and undergraduate industrial teacher training; (4) Further progress in the Music Department under Professor R. E. Lovett, and the enlargement of its scope with return of Professor H. H. McGarity after two years of graduate study leave.

The School of Chemistry and Geology has further increased its working facilities by developing the area over the auditorium in its modern building. One of the new rooms is a conference room;
a second is for radioisotope work being carried on under the Atomic Energy Commission contract; a narrow adjacent room is equipped with radioactive particle-counting equipment; another is a spectroscopic laboratory, with air-conditioned darkroom.

With the return of Professors Brownley and Hobson from graduate work for their Ph.D. degrees, several changes to improve the efficiency of the Chemistry Department were put into effect.

A diligent search has been in progress to find a successor to Professor Berry who resigned his position as Acting Head of the Geology Department entirely for personal family reasons.

A representative of the American Chemical Society Accreditation Committee inspected the school in April 1953, and upon his favorable report the ACS has placed the School of Chemistry and Geology upon its Accredited List.

The faculty of this school has devoted much time and thought to means of reversing the apparent trend towards lower scholarship among the students during the last few years. Three means of stimulating scholarship have been adopted: (1) Excusing from final examinations students who have semester averages of A or B; (2) Postponing chemistry for entering students until they have completed their remedial mathematics; (3) Having all students take the same course in chemistry for one semester and then divide on the basis of their need for chemistry in their later curricula.

Chemical research work has been continued by several staff members: (1) The Atomic Energy Contract research program is progressing very satisfactorily under Dr. Dinwiddie and informal notification has been received that the contract is being continued; (2) Dr. Schirmer is still working on his spectroscopic method of determining minor elements in soils; (3) Dr. Brownley is trying to work out a rapid, accurate colorimetric method of determining fluoride ion quantitatively in connection with the great increase in fluoridation of drinking water.

The School of Engineering has made considerable progress during the school year, and the morale of the staff is outstanding, with excellent cooperation from members in doing extra work for the college. For example, the staff members in the Civil, Mechanical,
Electrical, and Architectural Departments cooperated very closely and worked harmoniously as a team to turn out the plans and specifications for Olin Hall, the new Ceramics Building, in record time.

The F. W. Olin Ceramic Engineering Building.

The members of the staff have participated also in both industrial research and in government-sponsored research projects under the supervision of the Engineering Experiment Station. The general efficiency of the staff has been excellent, and several members have shown interest above and beyond that expected for routine work.

The Department of Ceramic Engineering has done an outstanding job on research projects in spite of the heavy teaching load thrown on it by the resignation of the professor of geology in January. Professor Gilbert C. Robinson, Head of the Department, has done excellent work in teaching and research, besides devoting a large amount of time to the arrangements and details of the new building, Olin Hall. Some excellent research work with the ceramic industries of South Carolina and on the use of ceramic materials has been done.

The Engineering Experiment Station has supervised several projects, including one with Sonoco Products Company, one with the
Columbia Products Company on the development of the fiberglass truss, a Kress project on saw teeth or circular saws, and a federal project covering further tests with different varieties of bamboo. The station also supervises the work of the special project on teaching and research on water and sewage under the special $10,000 appropriation by the General Assembly.

The School of Textiles has had for the fourth year the largest enrollment of any textile school, having an average of 592 students for the two semesters. The enrollment is now approximately one-fourth of the enrollment of all ten textile schools in the nation. Students graduating in February, June, and August will make a total of 110 graduates for the year. The demand for the graduates is great.

Research projects in textiles include: (1) From the USDA four control research projects on cotton and one just completed. (2) Several projects with commercial companies and a spinning project with Deering Millikin Company. (3) Research using funds under the Sirrine "extra professor" program. (4) Research in the development of improvements on testing and processing machines, adding four more items to the 10 items reported last year. Four of the developments have been taken by commercial companies to be manufactured for the industry. (5) Dr. A. N. J. Heyn has published two articles on his fiber research and will soon have a much needed new book on microscopy. (6) Professor Joseph Lindsay, Jr., conducted a research project on dyeing of blends of wool with Orlon and Dacron, and a project on treatments of fabrics with anti-static agents.

Five additional scholarships for textile students are now available:

1. A Dow-Corning Company fellowship for graduate work in textile chemistry; $1500 plus tuition.
2. The Celanese Corporation $2400 fellowship for graduate work in textile chemistry.
3. The Keever Starch Company $400 scholarship for sophomores in textiles.
4. The American Enka $400 scholarship for juniors majoring in textiles.

5. The Interchemical scholarship for chemistry, physics, and textile chemistry juniors.

The efficiency of the School of Textiles continues to increase with the greater experience and training of the staff and the new equipment in use with most of the new fibers in addition to cotton and wool.

The Graduate School, since its organization in 1945, has awarded earned advanced degrees to 65 students. Sixteen of these received their degrees at convocations held during the 1952-53 year.

The enrollment of graduate students during the year was 58 the first semester and 68 the second semester. A large percent of the second semester new enrollment was of students who had completed their tour of duty with the Armed Forces.

Clemson was one of the last of the Land-Grant Colleges to offer graduate courses and consequently has one of the smallest groups in its Graduate School.

The graduate program has progressed satisfactorily. Outstanding progress has been made in entomology and zoology. An excellent program has been developed in mathematics.

Lack of space and equipment has made serious problems in several departments, but it is anticipated that this handicap will be partly eliminated when the new building program materializes.

[Signature]
President
THE CLEMSON AGRICULTURAL COLLEGE

REPORT OF THE TREASURER

A. J. Brown, Secretary-Treasurer

THE CLEMSON AGRICULTURAL COLLEGE OF SOUTH CAROLINA

COLLEGIATE ACTIVITIES

Fiscal Year July 1, 1952 to June 30, 1953

INCOME

Legislative Appropriations:
(Revenue from Operation of Clemson College Transmitted to State of South Carolina)

Tuition & Matriculation Fees
   Session 1952-53 $ 312,941.32
   From Other State Funds 1,266,008.68
   Total Legislative Appropriation 1,578,950.00

Federal Funds 45,348.31
Endowment Funds 9,266.36
Miscellaneous — Rents, Sales & Service 96,261.00

Student Fees:

   Laboratory Fees $ 222,382.66
   Class Maintenance Fees 45,522.95
   Summer School 1952 16,972.84
   Summer School 1953 59,071.85
   Total 343,950.30

Sales and Service Collegiate Departments 381,973.78
Auxiliary Enterprises 1,217,544.54
Total Income Collegiate Activities $3,673,294.29
## EXPENDITURES

**July 1, 1952 — June 30, 1953**

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<th>Classification</th>
<th>Amount</th>
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<td>A-1 Salaries</td>
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<td>B-2 Travel</td>
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<td>B-3 Telephone &amp; Telegraph</td>
<td>10,893.25</td>
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<td>B-4 Repairs</td>
<td>145,075.30</td>
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<tr>
<td>B-6 Heat, Light, Water, Coal &amp; Power</td>
<td>84,280.79</td>
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<td>B Contractual Services</td>
<td>29,431.69</td>
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<td>C Supplies</td>
<td>955,064.51</td>
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<td>D Other Charges</td>
<td>193,390.51</td>
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<td>G-7 Equipment</td>
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<td>H-2 Buildings</td>
<td>16,959.68</td>
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<td>H-4 Transfers</td>
<td>1,406.54</td>
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<td><strong>Total Expenditures</strong></td>
<td><strong>$3,479,645.92</strong></td>
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## STUDENT ACTIVITY FUNDS

**Receipts:**

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<td>Athletic Association</td>
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<tr>
<td>Taps</td>
<td>28,319.46</td>
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<td>Tiger</td>
<td>11,967.85</td>
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<td>YMCA</td>
<td>53,361.33</td>
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<td>Concert Series</td>
<td>18,532.54</td>
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<tr>
<td>Clemson Alumni News</td>
<td>500.00</td>
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<tr>
<td>The Agrarian</td>
<td>698.33</td>
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<tr>
<td>Bobbin &amp; Beaker</td>
<td>1,906.98</td>
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<tr>
<td>Student Organizations</td>
<td>969.41</td>
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<td><strong>Total Receipts</strong></td>
<td><strong>$369,781.09</strong></td>
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**Expenditures:**

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<td>A-1 Salaries</td>
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<td>A-2 Professional Service &amp; Wages</td>
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<td>B-2 Travel</td>
<td>53,029.82</td>
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<td>B-3 Telephone &amp; Telegraph</td>
<td>1,936.26</td>
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<td>B-4 Repairs</td>
<td>20,568.11</td>
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<td>B Other Services</td>
<td>70,822.98</td>
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<td>C Supplies</td>
<td>54,656.71</td>
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<tr>
<td>D Fixed Charges</td>
<td>38,433.11</td>
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<tr>
<td>G Equipment</td>
<td>3,179.10</td>
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<tr>
<td><strong>Total Expenditures</strong></td>
<td><strong>$356,860.90</strong></td>
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</table>
SPECIAL STATE APPROPRIATIONS

Appropriations:

Filter Plant Enlargement $95,000.00
Purchase & Install Boiler $154,000.00
Remove, Enlarge & Build Steam Lines $208,000.00
Rebuild & Enlarge Electric System $60,815.00
Revamp Water & Sewer Lines $40,000.00
Remove & Equip Student Laundry $275,000.00 $832,815.00

Expenditures:

A-2 Wages 5,159.74
B Other Services 51.03
H-3 Improvements 3,570.00
H-2 Buildings 3,123.75

Total 11,904.52
Carried Forward 820,910.48 $832,815.00

SMITH-LEVER AGRICULTURAL EXTENSION WORK

Receipts:

Brought Forward $3,818.00
Appropriations: Federal 853,233.09
State 822,450.00 $1,679,501.09

Expenditures:

A-1 Salaries 1,317,231.00
A-2 Wages 8,830.71
B-2 Travel 242,528.86
B-3 Telephone & Telegraph 13,065.52
B-4 Repairs 17.50
B-5 Heat, Light, Water & Power 1,300.05
B Other Services 33,804.23
C Supplies 34,389.56
G Equipment 25,077.41

1,676,244.84
Carried Forward 3,256.25 $1,679,501.09
MISCELLANEOUS STATE APPROPRIATIONS — EXTENSION WORK

Receipts:
Camp Long Appropriations $2,400.00
Camp Cooper Appropriations 2,400.00
State Marketing Commission 6,887.50
State Camp Improvement Fund 110,000.00 $121,687.50

Expenditures:
A-1 Salaries 5,354.83
A-2 Wages 3,645.00
B-2 Travel 1,110.03
B-4 Repairs 2.70
B-6 Heat, Light, Water & Power 288.89
C Supplies 307.71
D Fixed Charges 1,160.83
G Equipment 1,722.11
H Buildings 20,857.46

Carried Forward 87,237.94 $121,687.50

SOUTH CAROLINA EXPERIMENT STATION

Federal Funds

Receipts:
Adams Fund $15,000.00
Hatch Fund 15,000.00
Purnell Fund 60,000.00
Bankhead-Jones Fund 68,111.24
Research & Marketing (Regional) Fund 21,505.00
Research & Marketing (Non-Regional) Fund 88,128.77 $267,745.01

Expenditures:
A-1 Salaries 246,532.79
B-2 Travel 2,818.05
B-3 Telephone & Telegraph 910.32
B-4 Repairs 1,866.86
B-6 Heat, Light, Water & Power 1,425.28
B Other Services 1,597.72
C Supplies 9,954.27
G Equipment 2,639.72 $267,745.01
THE CLEMSON AGRICULTURAL COLLEGE

SOUTH CAROLINA EXPERIMENT STATION
State Funds

Receipts:
Agricultural Research $ 211,093.00
Crop Pests & Diseases 59,022.00
Coast Station 11,985.00
Edisto Station 132,890.00
Pee Dee Station 56,360.00
Sandhill Station 12,380.00
Truck Station 38,610.00
Peach Research 13,150.00
Research on Lice & Pests on Tobacco 22,650.00
Water Management 10,000.00
Soil Testing Service 15,900.00
Fertilizer Inspection & Analysis 73,021.00 $ 657,071.00

Expenditures:
A-1 Salaries 314,493.17
A-2 Wages 131,413.65
B-2 Travel 17,026.26
B-3 Telephone & Telegraph 2,689.34
B-4 Repairs 13,677.42
B-6 Heat, Light, Water & Power 2,459.27
B Other Services 6,308.56
C Supplies 72,888.62
D Fixed Charges 5,129.63
G Equipment 30,306.91
H Improvements 8,678.17
H Land 47,000.00 $ 652,071.00*

*Crop Pests & Diseases Work was allowed to over expend 1951-52 appropriation by $5,000.00 in order to carry on emergency control work on white fringed beetles. Overdraft covered by 1952-53 appropriation.

SOUTH CAROLINA EXPERIMENT STATION
Farm Products Fund

Receipts:
Balance Brought Forward $ 64,824.26
Farm Products 530,563.31
State Marketing — Reimbursement 13,116.97
Market Information — Reimbursement 15,999.99 $ 624,504.53
SUPPLEMENTARY REPORTS

Expenditures:

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<td>Balance Carried Forward</td>
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LIVESTOCK SANITARY WORK

Receipts:

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<td>Sales &amp; Service</td>
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Expenditures:

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The Board of Trustees
The Clemson Agricultural College
Clemson, South Carolina

Gentlemen:

We, the members of the Board of Visitors for the year 1953, return to our homes with a feeling of deep gratitude to you and to all those in charge of the activities of Clemson College for the opportunity which has been granted us to survey the activities and affairs of the college. They were three busy days, but the pleasure of our task far out-weighed any sense of burden in the undertaking. From the moment of our arrival at the Trustee House, the courtesy and friendliness of the administration, the members of the faculty, and the student body made us feel thoroughly at home. Every need was immediately supplied and, in fact, few needs required mention because they had already been anticipated. We needed no return for undertaking this task but, had we done so, then more than adequate reward has been given to every member of the Board in the new friendships formed and the justifiable pride which each of us feels in an institution representing the highest, not only in the agricultural and industrial interests of our State but in the finest character of our citizens. As long as men so obviously believe in their tasks as opportunities under God for service to their fellowmen and the betterment of mankind and fulfill those tasks without prime regard for financial remuneration, America contains within her own sons that spirit which can maintain her great institutions and lead her forward into ever-enlarging life and responsibility. Again and again your Board of Visitors was impressed with the self dedication of those who teach and administer the business of Clemson College.

Nevertheless, the willingness of administration and faculty to serve in their respective callings without first regard to their own remuneration does not release the State of South Carolina from maintaining adequate standards of return for their efforts. Every
member of the faculty whom it was our privilege to know could increase his income by working elsewhere either in industry or in educational institutions in neighboring states. We feel that this condition should be rectified as speedily as possible; it is an obligation from which no citizen nor the General Assembly of our state can escape. Their willingness to be of service under the conditions in which they now work is our challenging opportunity to give them more just return. It would appear that the cost of living has now leveled off and we can therefore plan to bring professional salaries for teachers and administrators of educational institutions into line with present-day expenditures. We urgently recommend that this be done.

During the three days we resided on the campus, a busy schedule of visits to the various schools was undertaken. One or two schools had to be omitted due to lack of time, but the recommendations which we respectfully submit below are based upon what we saw and were told during our stay at Clemson.

The work of the School of Engineering is too important to need emphasis on our part. Fifty years ago our state needed to be taught the value of balanced agriculture; now an equally important lesson must be learned in balanced industry. With a thousand students working in the school and with a critical shortage of engineers not only in our own state but throughout America, attention is urgently needed for the construction of adequate facilities in which engineering can be taught. We noticed with concern much valuable equipment still crated because there was no room for its erection in the present buildings. We felt that the use of five temporary buildings and classrooms in other buildings was not a suitable way for this division to go forward. As there is legislative authorization for rebuilding, the Trustees are requested to consider those schools which have lost standing because of lack of space, and we urgently recommend that the School of Engineering be granted enlarged facilities for its most important work.

The influence of the Extension Service and of Agricultural Teaching and Agricultural Research is to be seen not only at the college itself but throughout the whole state. A veritable revolution has occurred in the agricultural life of South Carolina since the twentieth century dawned, and in no small measure do these divisions
of the college deserve credit for bringing this revolution into being. Certainly no other group of men in the state have done so much to recreate the agricultural technique of our people and to make it self-supporting of a comfortable way of life as those employed on the staffs of these three divisions. We heartily commend the program and the spirit of their undertakings.

Boards of Visitors in past years have already reported the need of a new hospital which would be adequate for the demands made upon it, fireproofed and in every sense useful to the college. We support their recommendation and trust that before long this important part of the college life will be attended to.

A most instructive hour and a half was spent in the office of the President. There we heard, not only from Dr. Poole himself but from the Commandant of the military program and several officers of the administration, the over-all plan by which Clemson College is governed and conducted. Your Board of Visitors was impressed with the sensibleness of the program. It seemed to us that no part of a college administration was left undone, but at the same time, there was no duplication or confusion in the work which was there undertaken. Especially would we like to commend the cleanliness and cared-for appearance of the buildings and the campus. A passing tourist on the highway must be impressed with the feeling that Clemson is beloved by those who look after her physical properties.

The School of Arts and Sciences needs a new building; failing this, it desperately needs adequate modernization of existing facilities. While industry may and does help the divisions of technical education and their equipment, the citizenry should not fail those departments which equip the spirit of her future sons. America cannot go forward in the development of her traditional way of life by technical education alone; she must educate the spirit by and with which men use their knowledge. The School of Arts and Sciences is a cultural department and lacks something of the glamour which attaches to those buildings and departments where complicated machinery and research are housed. Nevertheless, it is of paramount importance that this largest unit in the whole college receive adequate attention. Some of the classrooms which we observed were better suited for store-rooms than for
teaching the arts by which free men live. We therefore recom-
mend adequate and centralized facilities for this department, in-
cluding sufficient private offices where students can receive per-
sonal counsel from their faculty advisers. Our acquaintance with
the faculty strengthens us in the belief that students at Clemson
are losing invaluable help not only in subject instruction but in
the priceless aid in character building which these men would
willingly give if such consultation offices were available. This
school is more than handicapped by its lack of and poorness of ex-
sting facilities. Forty members of this faculty have no private of-
face space at their disposal. Your Board of Visitors believes that
this school should be particularly considered by the General As-
sembly in its appropriation of public funds.

We heartily concur with the proposed plan for enlargement of
the water plant. It is clearly apparent that Clemson College will
grow larger as the years go by. Estimates that by 1965 Clemson
will have as many as five thousand students do not seem to be ex-
aggerated. The water plant is already working at maximum, and
a serious condition could occur if its enlargement were not attend-
ed to in the near future.

While we walked over the campus, sounds of construction were
in the air. It is a pleasure to commend your erection of the new
ceramics building which will encourage new industry to settle in
our state. More than two hundred years ago no less significant a
potter than Josiah Wedgewood came to Aiken to find clay for his
magnificent china. Diversification of industries is not only neces-
sary for the economic health of the state; it is also an excellent plan
for our over-all industrial way of life. Educational facilities which
can encourage such a program will pay dividends to the state in
generations to come.

The program of the Y.M.C.A. with its consecrated staff is too
valuable to be ignored. While Clemson College is not officially a
religious institution, it does seek to build the type of character
which has always been significant to the people of our state. The
work supervised by the "Y", both in its own building and the ad-
dacent camp and also in the "quiet groups" which meet in the bar-
racks each evening and the consultation encouraged between staff
and students, permeates the life of the whole college.
Perhaps the outstanding building on the campus at the moment is the textile building where we spent a busy and fascinating hour. It was a surprising fact to many of us that Clemson College is now the largest textile school in the country. Surely that fact alone indicates the amazing change which has transformed the life of South Carolina during the past fifty years. This School of Textiles is a notable example of what a college can do when it has the combined support of its people through its General Assembly and interested industries. We enthusiastically commend the various textile concerns who have given equipment and funds to this department and we hope to see other departments supported in similar fashion by industries which will profit from the graduation of skilled technicians who can take employment with them.

The tour through the farm, barns, dairy, poultry, food preservation, planting, and artificial insemination units was so hurried that we could wish for more time in which to review what is being done by these various sections of the college. However, though our tour was a snap-shot view, we did feel that a great deal was being achieved to help people all over the state in these several channels of employment. Especially would we like to commend the artificial insemination program which is now serving thirteen thousand outlets throughout the counties of South Carolina. In view of the fact that more and more cattle are being raised in South Carolina, it is our belief that the livestock work at Clemson should be expanded materially. In the limited time available, what we saw in the poultry division might allow for some improvement.

A well prepared and well served meal was given to us in the main mess hall where we had the privilege of dining with the students. We would like to commend Mr. Fields for his excellent supervision of this most important department of the college life. Several of the Board of Visitors asked the students what they felt was the most important single improvement to be made at Clemson in the immediate future. The unanimous answer was "Barracks." We are more than happy to commend your program for the rehousing of the student body. The time is long overdue for this most fundamental change, and we look forward to hearing of the successful completion of your plans for the erection of modern fireproof housing for the students without over-crowding. It seems
SUPPLEMENTARY REPORTS

to us that this is only one indication of the forward-looking spirit of President Poole and his administration and of the Board of Trustees.

At the conclusion of the second afternoon of our visit, the Cadet Corps gave a dress parade in our honor. We were impressed with the sensible spirit of discipline, not only in the parade itself but in the whole tone of life upon the campus. The military program of the college is complimentary to rather than competitive with the academic life of the institution.

Our final morning began with a visit to the new chemistry building which is a magnificent institution and of which we felt very proud. You are to be congratulated in having brought this building into being and established it so completely. As research develops here, the School of Chemistry and Geology will probably become an encouragement to new industries which are already entering the life of South Carolina. Working with the great new chemical plant in the northern part of the state and with the huge hydrogen bomb plant near the Savannah River, it will serve to produce trained men to enter these new industrial ventures in our midst.

The Graduate School had no building or even faculty to present to us; nevertheless, its introduction and developing function is a most important part of the future plan for Clemson College. We concur with Dean Webb's suggestion that in order to develop graduate courses there is need for more doctors on the Faculty. This can be realized only by considering the salary scale of professorships and by the establishment of fellowships to encourage advanced study. Many colleges now have paying fellowships of $1000 to $1500 a year, in return for which they receive as much as half the time of the graduate student during his residence. This is, in reality, an inexpensive form of semi-skilled labor for the institution. Clemson needs such fellowships and, we were told, may have some limited funds for this purpose next year. We recommend that this matter be given thoughtful consideration. It would appear that Clemson College could advance into the enviable position of being one of the great technical agricultural graduate institutions of our country. There is no need to emphasize the tremendous value of such a step nor of the honored position which the institution would occupy if it could be achieved.
The Department of Fertilizer Inspection and Analysis is doing an invaluable service for the people of the state. Its careful check on those products which enter its laboratories and its reports to the authorities have undoubtedly assisted largely in seeing that our people receive full value for their money. We commend its work, the spirit of the staff, and observe that the work is being undertaken in rather cramped quarters. Enlarged facilities would undoubtedly allow for even more efficient operation of the division.

The School of Education was so concerned with its vision it had no request to make. All of us were deeply impressed with the enthusiasm and deep sense of purpose which motivate Dean Washington and his faculty. Again and again during our three days at Clemson we heard with deep concern of the failure of many high schools to bring boys up to collegiate level. The remedial courses in English and Mathematics which Clemson offers to new students not able to meet the requirements are to be commended, but a deeper problem than remedy must be met. It is not the purpose of the Board of Visitors to review the whole education program of our state. We dare to mention in this report the need for salary adjustment in high schools and grammar schools but emphatically agree with the School of Education that higher salaries alone will not solve the problem. There must be a sense of vision and of the spiritual purpose underlying the teaching profession. The dignity of the task must be recaptured by those who undertake the teaching of boys and girls. In several districts of our state this has occurred, and, in fact, there are many examples of teachers who have never served without it. But we rejoice that the School of Education at Clemson will assist in seeing that this spirit is not lost but is revived among the teachers of tomorrow. Any help which can be given to this school to adequately fulfill its tasks will pay rich dividends to future generations. We can build million-dollar schools, but unless we have consecrated teachers, the schools are of little value.

Miss Graham was exceedingly kind when we visited the Library. We noted that it is too crowded, and in our short walk through the stacks we were impressed that sufficient room was not available to house the various books, magazines, and other publications. Some of these were bunched up because they were crowded in the stacks. Either increased space is needed or a transfer of material
to micro-card (micro-film). In the last six years the material housed in the Library has been doubled, yet there has been no extension of space. Eventually the lack of space will cost more through wear and damage to the material than enlarged space for its preservation. We therefore recommend that those rooms recently vacated by the Department of Social Sciences be fitted with shelves and furniture and decorated for use. Books now packed away in boxes can then be displayed and used by faculty and students. We also recommend increased seating space, and learn with concern that students often have to leave the library because they cannot find desks and chairs at which to perform their work. An elevator for the moving of books and the use of the staff, and improved lighting, especially in the main reading room, would also be of value.

As we concluded our visitation, every member of the Board felt inspired that South Carolina has such an excellent college. The “looking to the future” spirit which motivates the administration, the faculty, and the trustees speaks well for those in authority over this educational institution. Diversification of agriculture has already gone a long way, and in no small degree this is due to the influence of Clemson. In the next generation diversification of industry will encourage a balanced economy for our people. The new ceramics building now being erected, the chemistry building recently completed, and the work of the Graduate School, are important means to this end.

We were equally moved by the spirit of the school. There is a happy blending of military discipline and individual initiative which is possibly unique among the higher educational institutions of the United States. We endorse this spirit and trust that through future generations Clemson will continue to be characterized by it.

It is impossible to escape the symbolism of Mr. Calhoun’s house in the heart of the campus. John C. Calhoun was the intellectual giant in the U. S. Senate of his generation. He combined a razor-sharp intellect with profound study and buttressed his great ability with courage, devotion to his cause, and unfailing courtesy even to his opponents. It seemed to us that he would have felt completely at ease in the intellectual and ethical atmosphere of this college which has spread around his home.
In conclusion, we again desire to express our deep appreciation to you the Board of Trustees for granting to each one of us the privilege of serving as your Board of Visitors, to Dr. Poole, to Mr. Walter Cox, and to all the staff who treated us, not as visitors but friends. We left for home feeling that in some indefinable manner Clemson belonged to us and we belong to Clemson. We heartily commend the work which you are doing with such sensible vision. With enlarging support from the General Assembly and the people of South Carolina and the industrial and agricultural activities which will benefit from the teaching and research here undertaken, and from other public-spirited people, we believe that you will go forward to even more notable accomplishments. It is our profound conviction that Clemson College is an unique institution in the state and that it needs not only its legitimate share but unusually generous support from the General Assembly. For it is here that the future wealth and prosperity of the state is being determined. We have many resources in our soil, in our rivers, and in our water supply. God has granted these to us; it is our task to educate those men who have skill and knowledge sufficient to exploit those resources and make them part of our overall economy. In producing such men, Clemson is enabling the whole state to increase in wealth, to provide a happier life for its people and increased educational facilities of many varieties for generations to come.

Respectfully submitted,

W. L. Irwin
H. T. Edwards
V. D. Ramseur
C. H. Albright
Dr. O. T. Finklea
A. J. Rogers

William H. Grier (Hold over member)
E. Berrien Sanders
The Reverend Ralph S. Meadowcroft
Dr. Walter Bristow
Senator Marshall B. Williams
Senator J. J. Wheeler
George W. Gage
The South Carolina Experiment Station of Clemson College includes the central unit at Clemson and the five substations located in the different agricultural regions of the state. The central station works on problems of statewide interest and on the problems of particular interest to the Piedmont region. The five substations devote most of their research activities to the problems of their respective regions: the Pee Dee Station at Florence, the Edisto Station at Blackville, the Sandhill Station near Columbia, the Coast Station at Summerville, and the Truck Station near Charleston.

Below are brief reports of some important research projects and tests.

**Coastal Bermuda for Hay:** Coastal Bermuda grass is well adapted to the coastal area of South Carolina, where it is becoming popular as a hay crop. Slightly more than 7 tons of cured hay per acre were obtained in four cuttings at the Pee Dee Station in 1952. A fifth cutting was killed by frost. The hay was of excellent quality and was relished by livestock. Heavy fertilization with nitrogen is necessary for rapid growth and for high yields of hay with high protein content.

**Pasture Fertilization:** Pasture fertility problems have been studied on a pasture of a Kentucky 31-fescue-white clover mixture on a Grady sandy clay loam soil. This combination responded favorably to high applications of nitrogen fertilizer. Additions of 150 pounds per acre of nitrogen increased the yield 350 percent over that of no nitrogen. Even greater yield returns were secured by the use of phosphate fertilizer materials. Additions of 1000 pounds per acre of 20 percent superphosphate fertilizer increased the yield 500 percent over that where no phosphate was added.

**Taylor, a New Variety of Wheat:** The Taylor variety of wheat was released by this Experiment Station to the farmers of the state for fall planting through the Crop Improvement Association. This
wheat has been named in honor of Mr. J. W. Taylor, plant breeder, Bureau of Plant Industry, U. S. Department of Agriculture, who made the original cross from Trumbull and Frondosa varieties. The variety represents further selection work made from the original strain entered in the Southern Regional Nursery program in 1946. The variety is adapted to the Piedmont and coastal areas of the southeastern states, is moderately resistant to the diseases common to wheat grown in this area, and has given an excellent yield of good quality grain.

Soil Management Program: The Farms Department is operating the Maxwell farm to show the best principles of soil conservation and crop rotation on Piedmont soils. All lands with 12 percent or more slope are planted in forests, pastures, or close-growing crops. Terraces with close-growing and cultivated row crops are alternated on the remaining uplands.

Crop Improvement and Foundation Seed: The Crop Improvement and Foundation Seed Department produces seed of those varieties not being produced by commercial breeders, makes the seed
available to farmers, and inspects fields and seed in order that farmers may produce and sell certified seed. This department distributed registered Anderson wheat, Foundation and registered Climax lespedeza, Foundation hybrid seed corn of N. C. 27 and Dixie 18, and Foundation Coastal Bermuda during the year in order that farmers might produce certified seed and stock. A total of 38,592 acres was inspected for certification covering 14 different crops produced in South Carolina.

**Cotton Seedling Diseases:** A survey of the cotton fields of the state indicated that the yield of seed cotton in 1952 would have been 40 percent (approximately 270,000 bales) greater if there had been no infection of the cotton plants by various fungi and bacteria. The loss for each disease was below 5 percent, except for seedling diseases, which caused unusually heavy losses. Estimates indicate that 30 percent more plants would have been needed for a maximal yield. The seedling diseases were largely the result of seedling infection by soil-inhabiting fungi, control of which has been handicapped by lack of a method to evaluate possible effective fungicides. A promising technique has been developed recently in the botanical laboratories.

**Weed Control:** Good control of grasses and most weeds in cucumbers and melons has been obtained by a pre-emergence spray of Alanap at a cost of about $3.00 per acre. This should reduce hand weeding costs considerably, and in many cases permit omission of one cultivation. Pre-emergence weed control on various types of beans and related crops also appears promising. Recommendations to growers on the use of these chemicals may be released within the year. Results on other crops appear promising but need to be investigated further.

**Disease-Resistant Sweet Potatoes:** Artificial inoculation experiments have shown that certain sweet potato strains possess a definite degree of resistance to black rot fungus. This organism causes one of the most serious field and storage diseases, and commercial varieties now in use are very susceptible. Resistance to internal cork disease is already available in numerous strains, and the possibility of combining resistance of these two diseases in one variety is being investigated.
Internal cork of sweet potatoes. Sweet potato slices severely infected with internal cork.

Mildew Control on Cucumbers and Cabbage: Manzate appears to be slightly better than the fungicides now used on cucumbers for anthracnose and downy mildew control. Spergon has been found to be quite effective for controlling cabbage downy mildew on the heads of fall crops and in the plantbeds of the spring crop. Several new soil fungicides, in preliminary tests, appear quite promising for the control of certain diseases usually classed as difficult and often impracticable.

Soil Fumigation with Chemicals: Soil-borne organisms, especially nematodes, are causing heavy losses with certain crops in coastal South Carolina, especially tobacco and vegetable crops. Soil treatment with chemicals and the breeding of resistant varieties have resulted in a high degree of control and increased yields. On heavily nematode-infested soil at the Pee Dee Station in 1952, cotton yields were increased by 703 pounds and 613 pounds per acre
for Dow fume and DD treatments respectively from single row application. The per acre cost of fumigation varies from $10 to $16 for one stream per row to $40 for broadcast application. The single stream per row, while not as effective as the broadcast, has given substantial yield increases at moderate cost.

**Fumigation Controls Sting Nematode:** On the more sandy soils of the Coastal Plain, the sting nematode drastically reduces or completely destroys the yield of cotton, corn, soybeans, and sweet potatoes. The only profitable crops that can be grown on such areas are winter small grains, tobacco and watermelons. Fumigation trials with DD and EDB were initiated in 1952 at the Pee Dee Station. Promising results have been obtained with at least one of the chemicals. It is believed that the added cost of the chemicals, approximately $12 to $15 per acre, will be low enough that the farmers on sting nematode-infested soil will find it profitable to fumigate corn, cotton, and sweet potatoes.

Control of sting nematode on cotton by soil fumigation. A and B are treated areas; C and D are non-treated areas.
Healthy Tobacco Plants and Quality Tobacco: The continued spread and threat from such tobacco diseases as nematode, black-shank, Granville wilt, and Fusarium wilt magnify the importance of having healthy plants at the proper time for transplanting. Nematodes are a constant threat to plant production, and when inoculated plants are transplanted to the field, the grower can expect a reduction in yield and quality of tobacco. Recent results have shown that nematodes along with weeds can be controlled in seedbeds by treating the soil in the fall with Nu Green (100 pounds) and cyanamid (50 pounds) along with one gallon of DD mixture (dichloropropane-dichloropropene) per 100 square yards of bed area. Methyl bromide under gas-tight covers before seeding has proved very effective in controlling weeds and nematodes.

Irish Potato Improvement: Improvement in the South Carolina Irish potato crop in the past six years is an outstanding example of what can be accomplished by concerted effort on the part of research workers, growers, and packing-shed operators. This improvement, which involves the use of new varieties, better production methods, and washing, has resulted in a marked increase in the demand for the local crop during a period when competing areas have been forced to reduce production. Latest improvement in this program was the development of an effective means of control of the wireworm which has plagued growers for decades. As a result of experiments at the Truck Station, growers now attain almost perfect control by the use of chlordane mixed in the fertilizer at a cost of only $3.00 to $5.00 per acre.

Experiments with Liquid Fertilizer: Various publications are filled with advertisements making great claims for liquid fertilizers for use as foliar sprays. Results with tomatoes, cucumbers, and Irish potatoes on Coastal Plain soils have failed to reveal any benefits from these materials on crops which have received normal fertilization.

Cantaloupe Breeding: Efforts to develop a cantaloupe which will produce high-quality fruit despite leaf diseases common to the southeast are beginning to show results. The illustration below shows representative fruit of one of the new breeding lines (32-8),
illustrating its flesh thickness as compared with the standard variety. The total soluble solids in the juice (proportional to sugar content) of the 36-4 line, another new breeding line averaged 12.4 this year as compared with 10.0 for Hales Jumbo. The resistance to downy mildew is only moderate, but it is believed sufficient to keep the plant in good condition for a week or ten days longer than the standard commercial variety.

Cross-section of fruit of one of the new mildew-tolerant types compared with that of the standard Jumbo Hales Best variety, illustrating the greater flesh thickness of the new type.

**Elongate Flea Beetle Injury in Sweet Potato Plantings:** The enlarging root of the sweet potato is frequently injured by larvae of the elongate flea beetle. This injury is more commonly found in plantings made on Piedmont soils in South Carolina. Control has been obtained at Clemson for the past two seasons with several insecticides applied to the soil with the fertilizer prior to plant setting. Heptachlor and aldrin applied at the rate of 1½ or 3 pounds per acre have been particularly effective in controlling this insect.

**New Type Cooker-Cooler for Peach Canning:** Information on better methods of processing peaches is constantly under study at the
Horticultural Products Research Laboratory. A new type of cooker-cooler has been developed, which has been under investigation for three years, and has reduced the standard cook of 25 minutes to 4½ minutes at 212 degrees F. The quick heating and cooling is accomplished by rapidly rotating cans placed on top of long rollers. This process is of real interest to the fruit processor looking for better methods of peach processing.

**New Southern High Bush Blueberries:** The first southern high-bush blueberry plants were set at Clemson 13 years ago. The plants are thriving, very productive, and promise to have a place in every South Carolina garden. The varieties resulting from breeding average nearly twice the fruit size of seedlings originated in the wild. The 1953 cup count (number of berries required to fill a one-half pint cup) for Callaway was 107 and for 9-112 was 102, while for Myers it was 188 and for Clara it was 190. In addition, the southern highbush plants are more vigorous than northern highbush plants, most of which died during the 13 years.

Left: Southern highbush blueberry, a seedling with a height of 4 feet at the end of five seasons' growth. Right: Northern highbush blueberry, variety Cabot with a height of 2 feet at the end of five seasons' growth.
Reducing Costs in Swine Production: Feeding tests with fattening swine over a three-year period have shown that when cottonseed meal is substituted for a supplement containing fishmeal, the daily gains of the hogs are reduced about 20 percent and the feed required for 100 pounds of gain is increased 25 percent. However, when B₁₂ and antibiotics are added to this same cottonseed meal supplement, the efficiency of the ration is increased to such an extent that the hogs make faster and cheaper gains than those receiving the animal supplement. The vitamin B₁₂ and antibiotics have made it possible for the feeder to substitute a reasonably cheap vegetable protein supplement for the animal supplement in the ration. This substitution has not reduced the daily gain of the hog but has decreased the feed required for 100 pounds of gain.

Crossbreeding Increases Cattle Profits: As cattle prices drop to lower and lower levels, it is more important that producers use every possible means of cutting production costs. One thing that every breeder can do is to crossbreed for production of fat calves. The evidence in favor of crossbreeding increases as more calves are produced in the cattle-breeding project at Clemson and the Coast Station. It is now definitely established that the crossbred calves will weigh about 50 pounds per head more than the purebreds at weaning age. Crossbred calves also have slightly higher dressing percentage and carcass value. Weaning weights of Hereford-Angus crossbred calves are not significantly different from those of Brahman-British crossbreds.

Treatment of Virus Pneumonia in Calves: Fourteen calves, one to three months old, infected with virus pneumonia did not respond to antibiotic or “sulfa” treatment. One injection of 10 cubic centimeters of 10 percent bovine gamma globulin affected a cure in 24 hours. Two infected control calves, treated with antibiotics and “sulfa” compounds, but not given bovine gamma globulin, died 48 hours later.

Blackstrap Molasses for Dairy Cattle: Large quantities of blackstrap molasses have been diverted from alcohol production to the feed industry. A study of the value of molasses for dairy cattle is being conducted by the Dairy Department. Yearling heifers fed molasses supplement made 23 percent more growth than the con-
trols and at somewhat less cost per pound of gain. The heifers balanced their rations satisfactorily when the molasses was fed in a trough free-choice. Heifers of breeding age fed molasses free-choice grew 42 percent above normal rate. Milking cows with greater appetites were not able to balance their rations free-choice. They consumed an average of 26.9 pounds of molasses per cow daily, with the results of a lower consumption of roughage and a loss of 5 pounds of milk per cow daily. By restricting the molasses fed to 9 pounds per cow daily, the feed consumption and milk production returned to normal.

Irrigation of Bermuda Grass: Irrigation of common Bermuda grass fertilized has been studied for a two-year period, involving four drouths the first year and three the second year. Under the conditions of this Dairy Department experiment, irrigation of Bermuda was not profitable, perhaps the foremost reason being that the recovery of Bermuda from drouth was rapid even with small showers. The data indicate that the average dairyman should use larger quantities of fertilizer, particularly nitrogen, before investing in equipment for irrigation of Bermuda grass.

Trench Silos for Inexpensive Storage of Roughage: The red clay soils of the Piedmont are especially suited for construction of trench silos. Experience in building these silos for the Clemson dairy herd indicates that large silos holding 600 to 800 tons can be constructed with a dragline or a front excavator and loader for less than one dollar per ton of capacity, if thoroughly packed with a tractor. The top is covered with treated builders' paper and 12 inches of sawdust. Silos so covered do not need a protective roof, and spoilage losses have been less than is commonly experienced with vertical silos.

Cottonseed Meal Protein Supplement for Broilers: Experiments show that cottonseed meal may replace at least one-half of the soybean meal as a protein supplement in a standard broiler ration. Hydraulic or screw-press cottonseed oil meals gave equal rates of gain as soybean oil meal when they replaced one-half of the soybean oil meal but were not as good as soybean oilmeal when used to replace the entire amount. A Degossypolized solvent extracted cottonseed oil meal was equal to soybean oil meal when used to re-
place the entire amount of soybean oil meal. Satisfactory growth and feed efficiency were obtained on all three cottonseed oil meals. The results of these experiments show that high quality cottonseed oil meal may be used more extensively in broiler rations.

**Organic Insecticides Aid Peach Grower:** Research with organic insecticides has shown that parathion gives the most effective overall control of peach insects. Parathion protects trees as well as fruit, prevents defoliation of trees, controls borers and insects.

**Control of Flies:** The history of fly control with chemicals indicates that many methods of control must be employed. The use of DDT treatments almost eliminated flies for a while in some areas, but many flies survived the DDT treatments and lived to produce a line of flies resistant to that insecticide. Poison baits remain an effective means of fly control. A new bait that offers promise of remarkable control under favorable conditions is composed of TEPP, molasses, and water, and is best applied on a clean floor after the morning cleanup. The bait, which is effective for four or five hours, is sprinkled on bare floors or on open walks where there is no danger of contaminating feed or water. Automatic cattle sprayers are very effective in the control of common biting flies, which through the years have caused untold losses in milk and meat production.

**New Chemicals for Cotton Insect Control:** Tests conducted in field plots showed that endrin, isodrin, strobane, methyl parathion, and chlorthion gave effective boll weevil control at practical rates of application. All these insecticides gave control equal to any of the recommended materials, but none were outstandingly superior. Methyl parathion and chlorthion also gave excellent control of spider mites and aphids at rates suitable for weevil control.

**Heptachlor for Tobacco Wireworm:** The tobacco wireworm caused unprecedented losses to newly set tobacco plants during 1953. Control experiments conducted under severe infestation showed that heptachlor can be added to the list of insecticides that will control the tobacco wireworm. The heptachlor was added to the water that was used in transplanting the plants in the field.
Irrigation Studies: At the Sandhill Station in 1952, a severe drouth of 28 days duration occurred in July, with adequate rainfall in May, June, and August. Irrigation there increased cotton yields from 340 to 1,960 pounds per acre, corn from 4 to 44 bushels, and tobacco from 790 to 910 pounds per acre.

Irrigation studies are being conducted at Clemson to include corn, pasture crops, peaches, cotton, water sources, and irrigation equipment. Studies through 1946-52 show an average net profit of $66.76 per acre per year for irrigated over nonirrigated corn; also that maximal return per acre inch of water applied may be obtained by maintaining 25 percent available moisture for the period from tasseling to maturity.

A quick-attach pump mount has been designed to utilize local farm power for irrigation — to fit various types of farm tractors. Each pump may be mounted or dismounted completely by one man.
in 5 to 10 minutes. These mounts, being flexible, may be dropped below the level of the tractor to reduce the suction head. The pump is primed from the intake manifold of the tractor, thus eliminating costly priming devices.

**Cotton Mechanization:** Experiments have been designed to determine the field conditions best adapted to mechanical harvesting, with emphasis on methods and machines more adaptable to conditions of the southeast. Production and experimental models of the steel roller stripper and the spindle-type harvester have been included. The results have shown that the spindle-type picker is best adapted to the southeast. For best picker operation, cotton should be planted to a thick, uniform stand and clean cultivation practiced. The presence of grass, particularly crabgrass, lowers the grade and reduces picker efficiency. A defoliant should be applied 7 to 10 days before picking, which should begin as soon as 60 percent of the bolls are open.

Mechanization field tests on chemical weed control in cotton are showing that a tool once thought impractical for this area can now be used to advantage. Present chemical weed control practices permit the cotton to attain a height of 6 or 8 inches relatively free of weeds and grasses, making a condition very satisfactory for the use of the flame culti­vator.

**Agricultural Data:** The demands for statistical data concerning the agriculture of South Carolina comes from farmers who are concerned with future plans and from industries interested in agricultural raw materials. Our agricultural economists have met this demand with a greater variety of published information about our agricultural enterprises and now have available a number of publications with statistics on field crops and fruits, livestock and livestock products, sources and amounts of farm income, etc.

**Vegetable Marketing Surveys:** In surveys and appraisals of existing marketing organizations and facilities, more than 50 organized and functioning markets have been surveyed with fairly complete information on the kind and volume of various South Carolina products, and noting a variety of methods of buying and selling.
On the basis of an apple marketing survey in Oconee County, it was shown that almost two-thirds of the county's large crop of apples in 1951 were sold to truckers at the orchards at generally unsatisfactory prices. After the organization of the "Long Creek Apple Marketing Authority," with machinery and facilities for brushing, grading, and packing, the marketing of the 1952 crop was very satisfactory.

**Rural Family Living Study:** A rural family living study in a highly industrialized Piedmont county showed over 90 percent of the white farm families receiving some income from nonfarm sources. Rural nonfarm families spent more for food, but farm families generally had better diets nutritionally, largely because of more home-produced food. A larger percent of farm families were home owners and were buying and making more home improvements than those of the nonfarm group.

**Nutrition Improvement:** During the past ten years, Clemson nutritionists have helped every corn mill in the state with enrichment and sanitation problems. During that time, 160 tons of limestone were blended with iron, niacin, thiamin, and riboflavin and distributed to corn mills on a nonprofit basis. The limestone supplies calcium, the most deficient mineral in South Carolina diets. Sixty-three corn mills were persuaded to run shelled corn through a cleaning machine before grinding.

**Fertilizer Inspection and Analysis:** The Department of Fertilizer Inspection and Analysis is charged with the enforcement of the South Carolina fertilizer law. All fertilizer manufacturers must register their products with the department before offering them for sale in the state. The department secures official samples for analysis to see that the guarantees are met, inspects for tags, proper bag printing, and weights of fertilizers. It also makes analyses of insecticides, unexploited sources of water, minerals, and parts of human bodies where poisons are suspected as the cause of death. The fertilizer inspectors collect both the fertilizer and the insecticide samples.

Annually 800 fertilizer dealers, 160 fertilizer manufacturers, and numerous salesmen sell to South Carolina farmers over one million tons of fertilizer materials valued at more than 45 million dollars.
Below is a tabulation of the activities of the department:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tons of fertilizer for which tags were furnished</td>
<td>1,000,766</td>
</tr>
<tr>
<td>Number of samples procured and analyzed</td>
<td>5,631</td>
</tr>
<tr>
<td>Total number of samples not meeting guarantee</td>
<td>229</td>
</tr>
<tr>
<td>Percent of samples deficient</td>
<td>4.13</td>
</tr>
<tr>
<td>Refunds to farmers on account of deficiencies</td>
<td>$13,982.32</td>
</tr>
<tr>
<td>Number of bags seized other than underweight</td>
<td>9,040</td>
</tr>
<tr>
<td>Number of bags underweight in dealers’ warehouses</td>
<td>2,741</td>
</tr>
<tr>
<td>Average shortage per bag, pounds</td>
<td>3.2</td>
</tr>
<tr>
<td>Number of bags underweight on farms</td>
<td>2,710</td>
</tr>
<tr>
<td>Number of pounds refunded farmers on account of short weights</td>
<td>26,139</td>
</tr>
<tr>
<td>Number of samples of water analyzed</td>
<td>43</td>
</tr>
<tr>
<td>Number of toxicological examinations</td>
<td>8</td>
</tr>
<tr>
<td>Number of insecticide samples procured</td>
<td>559</td>
</tr>
</tbody>
</table>

**The State Crop Pest Commission:** The Crop Pest Commission conducts regular and periodic inspections for pests destructive to agriculture, keeps a sharp lookout for any new infestations, and is responsible for the collection and analysis of insecticides.

**Inspections**—Two hundred and seventy-four nurseries with about 1,119 acres were inspected and certified; plants in 54 greenhouses located in 25 cities were inspected and certified.

Three inspections, including field, storage, and plantbed, totaling 207 inspections, were made for 69 sweet potato growers; approximately 200 cars of seed Irish potatoes were inspected in Charleston County.

During the 1952 season, 531,066 peach trees on 198 properties were inspected for phony peach disease; 87 apiaries containing 5,732 colonies of bees were inspected.

**Infestations**—Two new infestations of the white-fringed beetle were found at Conway and Myrtle Beach, and approximately 575 acres of this area have been treated.
White-fringed beetle damage to tobacco.

Trapping surveys for the Japanese beetle revealed no established infestations in the state, but a heavy infestation has existed in the Asheville and Hendersonville areas in North Carolina, and an infestation on the South Carolina side would not be surprising at any time.

Trapping surveys for the sweet potato weevil revealed that there appear to be fewer weevil-infested locations than at any time since 1946, when field operations were begun.

Insecticides—A total of 114 companies registered 1,472 economic poisons in South Carolina during the year. A total of 114 pesticide samples have been analyzed and only one sample has been found deficient.

A group of 77 fertilizer samples containing chlordane at rates of 0.1 — 0.25 percent have been checked, using mosquito larvae, and 21 of these samples (27 percent) failed to kill mosquito larvae equal to the standard.
The Cooperative Extension Service carries to farm people the findings of research and successful farm and home experience in agriculture and home economics and assists them through practical demonstrations and interpretations in improving their farms, farm homes, and communities to the end that they may build and maintain a sound and progressive agriculture and rural life.

In each county, representative farm men and women are selected to serve on a county agricultural committee, and similarly representatives from each county make up the State Agricultural Committee, which aids the Extension Service and other agricultural agencies in developing programs for greater efficiency of the work.

Also, the Extension Service works closely with the Farm Bureau, the Grange, the Soil Conservation Service, the Soil Conservation Districts, and other organizations and agencies interested in the development of agriculture and rural life.

The 1952 agricultural program for South Carolina, developed by the Extension Service and the State Agricultural Committee, was based on programs developed in the 46 counties. The state program, under the slogan of "Balancing a Changing Agriculture," lists these seven points: 1. Balanced farming, 2. Efficient production of crops, 3. Efficient production of livestock on grassland farming, 4. Good marketing methods, 5. Good farm living, 6. Opportunities for rural youth, 7. The farmer's interest and participation in public affairs.

Specific lines of Extension activities included economics and farm management, balanced farming, home management, agricultural engineering, crops and soils, fruits and vegetables, farm forestry, livestock, dairying, poultry, insects and diseases, home grounds improvement, foods and nutrition, rural health, clothing, marketing, 4-H club work, distribution of information through publications, newspapers, radio, and visual aids. Highlights in some of
The South Carolina Livestock program is being built upon the strong foundation of permanent pastures and annual grazing.

these activities illustrate the value of Extension Service to the public:

In economics and farm management the work included presentation of farm and home outlook information at 73 county outlook meetings and 490 community outlook meetings, which were attended by 25,606 farm people.

Balanced farming awards were presented to 105 farm families for outstanding accomplishments in good farm planning and operation under five points: Good land use, Good farm organization and management, Balanced farm operations, Efficiency in production and marketing, Good farm living. Toward these goals Extension workers assisted 386 farm families in developing farm and home plans.

Agricultural engineering Extension workers assisted farmers with problems in farm mechanization, farm buildings, irrigation, cotton ginning, tractor maintenance, etc.
Efficient production of higher yields, a constant aim of Extension Service teaching, is noted in a number of typical instances, such as:

The average yield per acre of flue-cured tobacco on South Carolina farms has doubled in the past 20 years; and the average yield per acre of corn has doubled in the past 10 years.

The average yield of oats per acre — 30 bushels in 1952 — is the highest on record in the state. The average production of Irish potatoes, 154 bushels per acre, is a new high record for the state.

In Extension farm forestry, timber products selected and marked for cutting reached a value of $1,159,677; ten pulpwood buying stations furnished a daily market for pulpwood; and several hundred tree-planting and timber-thinning demonstrations were given.

The 1952 Extension Farm Forestry Program included demonstrations and assistance to farmers in timber thinning, selective cutting, timber estimating, fire control, disease and insect control and marketing.
The number of dairy cattle artificially bred through 18 cooperative breeding associations in 1952 reached a new high record of 16,210; farmers were assisted in organizing 10 cream stations, 148 milk routes, and other facilities through which were marketed $6,427,397 worth of dairy products.

Poultry production continued to increase under encouragement from Extension workers. Fifty-six hatcheries and 303 turkey flock owners cooperated in the National Poultry and Turkey Improvement Plan, while 81 poultry dressing plants in the state furnished outlets for the increasing poultry industry.

The soil conservation program of the Extension Service is conducted in cooperation with the Soil Conservation Service and the Soil Conservation Districts.

Notable progress was made also in such things as insect and disease control, farm home grounds, food conservation, nutrition and
rural health, and 4-H club work, in which 51,783 farm boys and girls received training in improved methods of farming, homemaking, health, citizenship, and leadership.

In carrying the 1952 program of agriculture to farm people of the state, extension workers made 102,849 farm and home visits to 59,348 different farms and homes; 128,633 farm people came to county extension offices and 131,851 called by telephone for information and assistance; county extension workers held 455 training meetings for adult leaders and 581 meetings to train 4-H club leaders; they gave 9,811 method demonstrations in improved practices in farming and homemaking to 149,360 farm people and 11,783 such demonstrations to 282,371 farm boys and girls; and otherwise served other thousands of South Carolina citizens.
Livestock and poultry owners continue to use the services of the Livestock Sanitary Department to prevent and eliminate outbreaks of contagious, infectious, and communicable diseases. In rendering service to the industry, 233,688 tests and specimens were examined in the laboratory.

**Vesicular Exanthema:** In July 1952, vesicular exanthema (a filterable virus disease of hogs) was found in several states. Instructions were immediately issued outlining procedure for the importation of swine and pork products into South Carolina. A close check was kept on all quarantined areas in the various states. On the whole, the meat packers and livestock dealers have been very cooperative in assisting in the prevention and control of this disease.

The Code of Laws of South Carolina was amended by the Legislature authorizing the state to cooperate with hog owners in paying for losses sustained as a result of Vesicular Exanthema infection. In accordance with the state law, all garbage containing raw meat is required to be heated in order to destroy the causative agent of Vesicular Exanthema.

**Brucellosis:** A constantly increasing interest in vaccinating calves against Bang's disease has been noted and 8,045 calves and 1,841 adult cattle were injected. The requirements for Brucellosis Accredited Area work now calls for testing such a large number of cattle that we have only about one-half as many Modified Accredited counties as compared with 15 years ago. The tendency in Brucellosis work is toward laying more stress on individual herd testing and the calfhood vaccination program. We have nine counties classified as Brucellosis Modified Accredited-Free areas and 476 herds classified as Brucellosis-Free Accredited.

**Tuberculosis:** Satisfactory progress is being made in controlling the incidence of Tuberculosis in cattle. A few infected herds have
been located, mainly where additions have been made. The state is classified as a Tuberculosis Modified Accredited-Free Area, and we now have 214 herds on the accredited list.

Hog Cholera: During the year, official representatives of this department treated 193,264 hogs against cholera for 6,531 owners. The use of the new types of vaccine for immunizing hogs against cholera has gradually increased during the year. It is expected that current research with these vaccines will produce a satisfactory vaccine at an early date.

Auction Markets: There are 35 auction markets under supervision in accordance with the state law. Ten permits have been issued to livestock dealers.

Breeders' Sales and Fairs: There has been a substantial increase in requests for assistance in checking the health status of animals at breeders' sales and state and county fairs. This type of work gives the animal owner assurance that his cattle and hogs congregated at these places will not be exposed to contagious and infectious diseases.

Law Enforcement: As a result of increased activities and the finding of Vesicular Exanthema in the border states during the year, the livestock inspectors have had a very busy year checking auction markets and trucks hauling livestock.

Educational Information: During the year, many timely topics have been given to the public regarding the prevention and control of animal and poultry diseases through the media of radio, newspapers, and discussions at group meetings.