THIRTY-SECOND ANNUAL REPORT
OF THE
BOARD OF TRUSTEES
OF THE
CLEMSON AGRICULTURAL COLLEGE
TO THE
General Assembly of South Carolina
1921
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LETTER OF TRANSMITTAL

To The General Assembly of South Carolina,
Columbia, S. C.

Gentlemen:

In obedience to the laws of the State, the Board of Trustees of The Clemson Agricultural College of South Carolina presents herewith the annual report covering the operation of the College for the fiscal year July 1, 1920 to June 30, 1921.

The report is voluminous because it is our desire to give to the Legislature the fullest information with regard to the work, the plans and the finances of the State's agricultural and mechanical college. The attention of the General Assembly is especially directed to the last chapter of the President's report, which deals with the financial condition in which the College finds itself. We present this condition to you with full confidence alike in your wisdom and in your patriotism. For thirty-one years the college has been able to live on the bargain entered into originally, whereby the College was to derive its support chiefly from the Fertilizer Tax. When obedience to this ancient compact imperils the very life of the College, the Board has no alternative but to ask you to share in its concern and provide a suitable remedy.

The report made by the experts employed by the Legislative Committee on Economy and Consolidation is the last exhibit of this report, and to it I direct your attention. We are entirely willing to have our stewardship judged by this report of impartial experts.

Very respectfully submitted,

ALAN JOHNSTONE,
President Board Trustees.
REPORT OF THE PRESIDENT OF THE COLLEGE
Covering the Fiscal Year July 1, 1921--June 30, 1922

Clemson College, S. C.,

December, 10, 1921.

From W. M. Riggs, President of Clemson Agricultural College

To Hon. Alan Johnstone, President of the Board of Trustees

Of the Clemson Agricultural College.

Dear Sir:

I have the honor to submit herewith the President's annual report covering the twenty-eighth session of the Clemson Agricultural College. The report covers the fiscal year from July 1, 1920 to June 30, 1921, and is intended for your thirty-second annual report to the Legislature.

I have arranged the report in seven main divisions as follows:

1. A GENERAL STATEMENT.
2. A FISCAL STATEMENT.
3. THE COLLEGIATE WORK AND ORGANIZATION
4. THE PUBLIC SERVICE.
5. THE STUDENT LIFE AND INTERESTS.
6. APPROPRIATIONS FOR PUBLIC SERVICE 1922.
7. THE PRESENT SESSION, 1921-22.
8. THE FINANCIAL FUTURE OF THE COLLEGE.
PART I. A GENERAL STATEMENT

THE SESSION OF 1920-21:

In all but its financial aspects, this session stands out as one of the best, if not the best, during the ten years I have been in the president's office.

I have never seen better conduct or better spirit on the part of the corps of cadets than we have had this entire session. The same statement might be made with equal emphasis with regard to the Faculty. Everybody and everything seems to have worked in harmony for the best interest of the college.

The Enrollment reached 847, the third largest figure in the history of the college. This total included 102 vocational students not in college classes. A striking feature was the persistence of attendance, the losses during the session being only one-half of the past eleven-year average. The summer school attendance of 234 was also the largest in the history of the college.

The Class Work was very much above the average as shown by the following percentages of students, who at the end of the session were not promoted to the next higher class:

Freshmen, 5.5%; Sophomores, .5%; Juniors, 2.2%.

The 1921 Graduates numbered 124. In respect to loyalty, earnestness and other good qualities, it was one of the best Classes in the history of the college. Under its wise and good president, Cadet-Captain G. G. Gilmer, this class had a full share in all of the good things which were brought about during the session of 1920-21.

The 1921 Summer School reached an attendance of 301 students, this being also the largest in our history.

The Discipline Record of the corps was as good as was its class record. During the entire session, only two students were dismissed and three suspended.

For the session, the average number of men per term to receive no demerits was approximately 32.1% of the total corps, and the number who received 20 demerits or less, thereby earning eligibility for the honor roll, 64.2%. Eleven
only exceeded the term and sessional limits of demerits and were required to withdraw.

During the session the Discipline Committee handled only ten cases. Six were found guilty and four were acquitted. Of the six found guilty, two were dismissed, three were suspended, and one was given a local punishment. During the third term the Discipline Committee did not try a single case.

Under these excellent conditions, it is not surprising that the college had the honor of being one of the four colleges in the Fourth Corps Area rated by the War Department as "distinguished college." The other three were The Citadel, Georgia Tech., and Auburn.

The "Student Activity Fee," giving free participation to all students in athletics, the Y. M. C. A., and other student activities, has had the marked effect of democratizing this important side of college life, in stimulating college spirit, and adding to the zest and pleasure of college life.

The Health of the Student Body has been exceptionally good. For the first session in many years we have escaped any kind of epidemic, although there have been cases of mumps, measles, and influenza on the campus and in barracks. Although we have had three or four serious cases of illness, there have been no deaths among the students at college. I regret to report, however, that Cadet J. R. Inman, one of the brightest students of the Freshman Class, and one of the finest young men in college, went home sick at the end of the session and died at his home in Charleston on June 18th.

Among the material Additions to the college plant in the year covered by this report might be named the three hundred acres added to the Coast Experiment Station for beef cattle experiments on coastal plain grass lands; the final completion of the small calf and hog barns; completion of the fifty-foot addition to the east wing of the engineering building; the enlargement of the postoffice; the new tile floor in the mess-hall, and the new improved kitchen, rebuilt after its partial destruction by fire in January.

In the matter of Organization the creation of the new Department of Student Affairs, with Prof. D. H. Henry in charge filled well a long-felt want. We had the good fortune to select in Capt. J. D. Harcombe a splendid mess officer.
The Legislature at its session in February made Appropriations for Clemson's Public Service of $226,147.15, this representing the full amount that was asked for tick eradication, agricultural research, live stock sanitary work, etc., None of this appropriation is available of course for any college purpose. The $50,000 for agricultural research included in the above total literally saved the life of our Experiment Station, which was languishing on the small and inadequate federal appropriation of $30,000 from the Hatch and Adams funds.

Among the Improvements not Visible to the eye were the inauguration of the new curriculums, whereby the college courses were greatly extended and enriched; greater co-operation on the part of the cadet officers in maintaining discipline; and a growing sentiment among student leaders that the inauguration of a thoroughgoing formal honor system is the most important thing that the student body can do for Clemson.

A record of the achievements of the past session would be incomplete without mention of the Home Coming last summer, and the Reorganization of the Alumni Association, the election of Mr. Folger as its Secretary, and the promise which this movement holds out for the good of athletics, increased attendance, and the promotion of all other college movements in which an Alumni Association can properly assist.

In closing this epitome of last session I regret to report so small an amount received from the fertilizer tax as $167.505.16—the smallest income from this source in any year, but one (1914-15), during the past fifteen years. But for a reserve fund saved up to meet just such an emergency, and at the expense of many needed things, we would not have been able to complete the year without the use of borrowed money. As it was, the college went through 1920-21 on the basis of an irreducible minimum of expenditure, and had to give up many needed and hoped-for items of equipment and improvement. If our resources for operating Clemson as a College only this past session are compared on a basis of attendance with those of any A. & M. College in the land, or any state college for men in South Carolina, the serious strain through
which we have passed can be readily appreciated: Let us hope that the good work Clemson is doing may not be so hampered again by mere lack of money.

INVENTORY.

Our inventory as submitted to the Governor gives the following property values as of date June 30, 1921:

<table>
<thead>
<tr>
<th>No.</th>
<th>Classification</th>
<th>Est. Present Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Office Equipment</td>
<td>$46,378.26</td>
</tr>
<tr>
<td>II</td>
<td>Household Equipment</td>
<td>56,298.44</td>
</tr>
<tr>
<td>III</td>
<td>Educational and Recreational Equipment</td>
<td>177,954.68</td>
</tr>
<tr>
<td>IV</td>
<td>Library Equipment</td>
<td>44,807.80</td>
</tr>
<tr>
<td>V</td>
<td>Vehicles</td>
<td>10,700.49</td>
</tr>
<tr>
<td>VI</td>
<td>Live Stock</td>
<td>51,876.77</td>
</tr>
<tr>
<td>VII</td>
<td>Medical and Surgical Equipment</td>
<td>1,424.84</td>
</tr>
<tr>
<td>VIII</td>
<td>Military Equipment</td>
<td>2,952.97</td>
</tr>
<tr>
<td>IX</td>
<td>General Plant</td>
<td>181,079.80</td>
</tr>
<tr>
<td>X</td>
<td>Buildings</td>
<td>1,107,565.00</td>
</tr>
<tr>
<td>XI</td>
<td>Real Estate</td>
<td>354,479.00</td>
</tr>
<tr>
<td></td>
<td>Equipment Totals</td>
<td>$2,029,081.63</td>
</tr>
<tr>
<td>XII</td>
<td>Supplies</td>
<td>86,450.77</td>
</tr>
<tr>
<td></td>
<td>Totals</td>
<td>$2,115,532.40</td>
</tr>
</tbody>
</table>

BURNING OF KITCHEN AND COMMISSARY:

Upon the morning of January 18 fire destroyed the roof and the interior of the kitchen, dishwashing room, bakery, and commissary. The gallant work of the cadets and an ample supply of water at high pressure kept the fire from gaining access through the messhall to barracks number one. Had it not been stopped short of the messhall our entire group of main buildings might have been destroyed. The following insurance was paid us promptly by the Sinking Fund Commission to cover our losses:

- Provisions and supplies: $3,173.54
- Equipment and utensils: 8,015.04
- New roof: 8,352.06
- Temporary roof and repairs: 964.71

Total: $15,505.35
With this insurance and $1261.77 in addition from the college building fund, we have built a steel supported roof and repaired and improved the kitchen, and put in new equipment so that we now have one of the best plants in the entire South.

I wish to direct the Board's attention to the very fine treatment and satisfactory settlement accorded the College by Mr. J. H. Miller, Secretary of the Sinking Fund Commission.

INSPECTIONS AND VISITATIONS:

Board of Visitors:

Under Section 17 of the By-laws, the Board of Trustees elects each year a Board of Visitors composed of one prominent citizen of each congressional district. For the fiscal year covered by this report the following composed the Board of Visitors: 1st District, T. S. McMillen, Charleston; 2nd District, R. B. Cunningham, Allendale; 3rd District, J. B. Park, Greenwood; 4th District, B. E. Geer, Greenville; 5th District, John R. Hart, York; 6th District, John W. McKay, Rowland, N. C.; 7th District, J. H. Clifton, Sumter.

This Board visited the college on May 3 and 4. All of the members were present except Messrs. McMillen and Clifton. Mr. Hart was elected Chairman and Mr. Geer Secretary. The report of this Board of Visitors is attached to this report, and careful attention is invited to it. It is an unusually strong document. It sets out, from the standpoint of impartial observers, the needs of the college, and commends the efficiency and economy of the college management in terms strong and unequivocal. Particular attention is directed to the recommendations of the Board regarding the financial support of the college.

Especially gratifying also in these days when the military form of government is not particularly popular, is the following comment of this Board of Visitors in regard to that feature of the college routine:

"While the Board of Visitors realize that there will always be objections, some well founded, to the military system of student government; still our observations of the work of the institution leads us to believe
that any change in this respect would be inadvisable. We were impressed with the orderly procedure of the cadets and the general expedition and efficiency with which the work of the college was carried along."

Visitation of Legislators:

It has been difficult, if not impossible, to get the Legislature as a body to visit Clemson. The few times our invitation has been accepted we have had a large crowd of people,—larger than we could handle,—but very few legislators. However, it is necessary that the Legislature have first hand information in regard to the work, plant, and efficiency of the institution. Therefore, I have pursued the policy of inviting during the fall months small parties of legislators to come here and look carefully into our work. In small groups we can show the internal workings of the college much better than to several hundred. We probably have now in the Legislature as many as 75 men who have been at Clemson and can give first hand information to any question in the Legislature which arises regarding the college.

In November 1920 we had first the following members of the three counties immediately adjoining the college: Messrs. Hendricks, Dickson, Ballard, and Harris, of Anderson County; Moon of Greenville County; Leopard of Pickens County; Mason, Bruce, and Dalton of Oconee. In the second and third parties there were the following legislative members: Messrs. Barnwell, Sprott, Hydrick, Atkinson, Kennedy, Kilnsworth, Counts, Smith, Sherard, Lancaster, McInnis, and Keller. While disappointed that a number who were invited could not attend, we appreciate the interest shown by those who came. Every effort was made to give our visitors the greatest possible amount of information in the short two days they were able to remain with us.

Inspections by the War Department:

The War Department made its usual inspections to determine the efficiency of the military instruction of the R. O. T. C. These inspections resulted in the college being given one of the four distinguished places in the Fourth Corps Area.
ORGANIZATION OF THE ALUMNI ASSOCIATION:

The Home Coming held on July 31 and August 1 was attended by 382 old students, and culminated in the reorganization of the Alumni Association, which up to this time had been as dead as the proverbial Hector. Mr. T. W. Cothran, Class 1896, was elected President, and the following compose the Board of Governors: Messrs. T. W. Thornhill, 1914, Charleston; T. B. Young, 1913, Florence; R. M. Simpson, 1910, Columbia; H. S. Johnson, 1910, Aiken; George Speer, 1908, Anderson. No better Board could possibly have been chosen from the alumni. This Board of Governors selected Mr. D. F. Folger, of the Class of 1916, as Secretary, and under his efficient administration substantial work has already been made in organizing the Alumni and making it a vital factor in the growth and development of the college.

LEGISLATION:

Public Service:

The legislature, as usual, was friendly to the college and every request made was granted in full.

Our estimate for Public Service was passed without reduction. The following amounts were asked for and received:

1. For Extension Service __________ $ 94,147.15
2. For Agricultural Research __________ 50,000.00
3. For Tick Eradication __________ 20,000.00
4. For Live Stock Sanitary Work _______ 50,000.00
5. Crop Pests and Diseases __________ 10,000.00
6. For Slaughter of Diseased Live Stock 2,000.00

Total __________________________ $226,147.15

But for these legislative appropriations it would have been impossible to have continued these lines of public service because of the reduced income from the fertilizer tax.

Loan:

A bill was passed authorizing a loan not to exceed $150,000.00 from the State during this calendar year, if so much was necessary. The terms of repayment require that we turn
over all the fertilizer tax over $250,000.00, but in no year, regardless of the tax, shall the payment be less than one-tenth of the amount borrowed, with interest.

BOARD OF TRUSTEES:

The vacancy in the life membership, caused by the death of Senator B. R. Tillman, remains as yet unfilled.

The Board held its three regular annual meetings in December, April, and July, and one extra meeting in September to consider the award of scholarships.

PART II. A FISCAL STATEMENT

The Treasurer’s annual report, which is attached hereto, gives the fullest information in regard to the expenditure of all college funds. The following is a summary of receipt and disbursements for college purposes and those activities required by law to be paid from the Fertilizer Tax receipts:

RESOURCES:

1. Interest on Clemson Bequest ------------ $ 3,512.36
2. Interest on Landscript ------------ 5,754.00
3. Morrill & Nelson Fund (U. S.) ------------ 25,000.00
4. Tuition from Cadets ------------ 13,486.40
5. Sales, Interests, Rents, etc. ------------ 46,232.54
6. Privilege Fertilizer Tax ------------ 167,505.16
7. From Reserve Fund ------------ 77,203.68

Total ----------------------------- $338,694.14

Expenditures

COLLEGE OPERATING EXPENSES:

1. Salaries, Supplies, Labor, Coal, etc. ------------ $253,910.34
2. Equipment for teaching ----------------- 7,886.46
3. Improvements and additions. -------- 26,244.82 $288,041.62
PUBLIC SERVICE PAYABLE FROM FERTILIZER TAX.

1. Fertilizer Inspection and Analysis $29,952.41
2. Scholarship and Advertisements 12,749.10
3. S. C. Experiment Station 5,467.55
4. Miscellaneous Public Service 2,483.36 50,652.52

Total $338,694.14

PUBLIC SERVICE:

As shown later under appropriate headings, the college administers a great deal of money for regulatory, research, and extension service, amounting to a total of $682,540.60. However, all of this money is appropriated under federal and state acts, which restrict its use. None of it is available for any collegiate purpose. Of the above total $435,352.09, passes thru the Treasurer's hands. The remainder is paid out direct by the Treasurer of the United States or by county treasurers, chambers of commerce, etc.

CADET FUNDS:

Likewise the money received from cadets for their board, laundry, uniforms, and other living expenses is held in trust by the college and administered solely for the benefit of the students. Only tuition and laboratory fees become a part of the college income.

The total of the expenditures under the Cadet Fund was $239,798.18. The receipts were $246,443.00. Balance carried forward to next session $6,644.82.

REVOLVING ACCOUNTS:

Also, the college has a large number of open accounts not supported by state, college or other appropriations. These are simply revolving accounts, representing no income to the college. Some accounts under this head are merely transfer accounts. Receipts from sales of produce, etc., under these accounts was $352,876.13, and expenditures $371,130.49. The book deficit indicated by the above figures is partly or wholly offset by increased inventory values in the shape of live stock, food stuffs on hand, etc.
RESERVE:
During the first six months of the fiscal year, July 1st to December 31st, the college receives very little revenue from the Fertilizer Tax—sometimes, as is the case this year, not enough to pay the cost of inspection or analysis. It is therefore necessary to reserve sufficient funds from the previous year to carry the college over this "dry" period. The College entered on this fiscal year July 1st, 1920 with a reserve of $154,413.03. This in no sense represents a balance, but merely a protective fund held back in spite of many needs which might easily have absorbed it. During the year $77,203.68 was absorbed, leaving a balance July 1, 1921 of $77,209.35.

SUMMARY:
The following condensed statement shows the entire funds administered during the fiscal year 1920-21 and gives an index to the magnitude and many-sidedness of the Clemson College activities.

Summary of Funds Administered
Fiscal Year 1920-21
Expenditures

1. For Collegiate Purposes $288,041.62
2. For Agricultural Public Service 682,540.60*
3. Revolving College Accounts 335,209.60
4. Cadet Funds (For Board, Uniforms, etc.) 241,957.16
5. Cadet Deposits (Personal Accounts) 87,764.19

Total $1,633,513.17**

* Under Item 2, $90,809.02 is paid out by the Treasurer of the United States, and $151,256.93 by County Treasurer and commercial bodies. But in all cases the vouchers are approved by college officers.

** Of this total expenditures, $1,391,447.22 is disbursed by the College Treasurer. Total receipts by College Treasurer were $1,513,349.74.

AUDIT:
The books and accounts of the Treasurer's office are audited annually by the State Bank Examiner's office. His audit is
appended to this report. His testimony to the accuracy and excellence of the Treasurer’s work is that of every auditor who has had an opportunity to inspect this well kept office.

RECEIPTS FROM TUITION:

The following is a statement of the receipts from tuition for the past ten years.

**Tuition Receipts.**

<table>
<thead>
<tr>
<th>Years</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five years prior to investigations by State Board of Public Welfare</td>
<td></td>
</tr>
<tr>
<td>1911-12</td>
<td>$5,340.00</td>
</tr>
<tr>
<td>1912-13</td>
<td>5,050.00</td>
</tr>
<tr>
<td>1913-14</td>
<td>4,850.00</td>
</tr>
<tr>
<td>1914-15</td>
<td>5,233.00</td>
</tr>
<tr>
<td>1915-16</td>
<td>4,670.00</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Five years subsequent to creation of State Board of Public Welfare</td>
<td></td>
</tr>
<tr>
<td>1916-17</td>
<td>$14,243.55</td>
</tr>
<tr>
<td>1917-18</td>
<td>14,590.00</td>
</tr>
<tr>
<td>1918-19</td>
<td>13,575.73</td>
</tr>
<tr>
<td>1919-20</td>
<td>17,472.83</td>
</tr>
<tr>
<td>1920-21</td>
<td>13,486.40</td>
</tr>
</tbody>
</table>

An act passed by the 1920 General Assembly exempting from tuition all students who had served in the World War, considerably reduced the tuition receipts for 1920-21.

**PART III. COLLEGIATE WORK AND ORGANIZATION SUPPORT.**

As stated in a previous chapter, the college work is supported almost entirely from the balance which remains of the fertilizer tax after the cost of the inspection and analysis has been paid. For the fiscal year 1920-21, the total expenditures for what might be termed “collegiate work” were as follows:

- For salaries, labor, insurance, coal, shop and laboratory, materials, etc. $253,910.34
- For teaching equipment and minor improvements and additions to plant 34,131.28

**Total Operating Expense** $288,041.62

This total is a very low operating cost of a technical college of this size.
ENROLLMENT:

The total enrollment for 1920-21 was 1081, distributed as follows:

(a) In College Courses:

- Seniors: 126
- Juniors: 156
- Sophomores: 180
- Freshmen: 244 (Total: 706)

(b) In Special Classes:

- One Year Agricultural: 16
- Specials and Irregulars: 21
- Federal Board students not in college classes: 104 (Total: 141)

Regular Session: 847

(c) Summer School Students: 234

TOTAL: 1081

The 847 students enrolled during the regular session of the college were distributed by courses as follows:

- In Agriculture: 386
- In Engineering: 330
- In Textile Industry: 98
- In Chemistry and Chem. Eng.: 22
- In Architecture: 11 (Total: 847)

OCCUPATION OF PARENTS:

- Farmers: 45.5%
- Merchants: 14.5%
- Clerks: 3.6%
- Lawyers, doctors and preachers: 3.5%
- Mechanics, etc.: 6.1%
- Unclassified: 26.8%

GRADUATES:

On Commencement day, June 7th, diplomas were awarded to the next largest graduating class in the history of the college. The Senior Class numbered 126 men. Of this number 123 have received the degree of B. S., and one more will receive his degree after making up a small amount of work on which he is behind:
GRADUATES

<table>
<thead>
<tr>
<th>Field</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Agriculture</td>
<td>56</td>
</tr>
<tr>
<td>In Mech. Engineering</td>
<td>18</td>
</tr>
<tr>
<td>In Elec. Engineering</td>
<td>21</td>
</tr>
<tr>
<td>In Textile Industry</td>
<td>11</td>
</tr>
<tr>
<td>In Chemistry</td>
<td>6</td>
</tr>
<tr>
<td>In Civil Engineering</td>
<td>9</td>
</tr>
<tr>
<td>In Architecture</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>123</strong></td>
</tr>
</tbody>
</table>

ONE YEAR AGRICULTURAL COURSE:

On May 20th, certificates were awarded to 13 men who satisfactorily completed the one-year course in Agriculture. It is a great disappointment to us that more young farmers in South Carolina do not avail themselves of this excellent practical course in agriculture.

CERTIFICATES OF MERIT:

Certificate for distinguished agricultural service were awarded to Mr. R. M. Cooper, of Wisacky, and Mr. Jas. L. McInstosh, of Dovesville, for their excellent work with Guernsey cattle.

SUMMER SCHOOL:

The sixth summer school extended from June 14th to July 24th. The enrollment reached a total of 234 students, distributed as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Teachers</td>
<td>46</td>
</tr>
<tr>
<td>Corn Club Boys</td>
<td>79</td>
</tr>
<tr>
<td>Cotton Graders</td>
<td>14</td>
</tr>
<tr>
<td>Horticulture</td>
<td>1</td>
</tr>
<tr>
<td>Federal Board Students</td>
<td>43</td>
</tr>
<tr>
<td>College Make-up Students</td>
<td>42</td>
</tr>
<tr>
<td>Preparatory Students</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>234</strong></td>
</tr>
</tbody>
</table>

SCHOLARSHIPS.

There were in effect 80 regular four-year county scholarships and 14 from the State-at-large, of which 63 were taking agriculture and 17 textile engineering. Only 10 of the One-
Year Agricultural Scholarships were filled. Of the above scholarships, 63% were held by farmers' sons.

Scholarships are not now as eagerly sought as heretofore. The careful examination by the State Board of Public Welfare into the ability of parents whose sons are seeking scholarships deters those who are not deserving from applying. Also the value of the scholarship ($100.00 and free tuition) represents a much smaller part of the total cost of college education than formerly. In the last ten years the cost of board, uniforms, books, and other necessities has almost, if not quite doubled.

Clemson College has not followed the practice of other colleges of filling scholarship vacancies with students who have not stood the prescribed examinations and made the required grade of 60% on such examinations. In other words, Clemson follows strictly the requirements of the law, but goes no further than these requirements. Neither the necessity of stimulating attendance or an abundance of funds would make more than strict compliance necessary or desirable.

TRAINING OF DISABLED SOLDIERS:

In previous reports I have described rather fully the difficulties incident to the training of disabled soldiers sent here by the Federal Board for Vocational Education.

During the past session the enrollment of these soldiers totalled 114. Ten of these were in college classes, 2 in the One-Year Agricultural course, and the remainder in special vocational courses.

Approximately 50% were married and lived in the vicinity of the college. Many of them were not comfortably quartered, but there was no way in which the college could render assistance because all college houses were occupied and there was a long waiting list yet to be provided for. During the past session, because of the small size of the freshman class, we were able to give up the first floor of barracks Number One to house the single men who could not get accommodations elsewhere. With an overflowing attendance this session (1921-22) the housing of these disabled soldiers in barracks necessitates undue crowding. The only relief I see is to build another
dormitory which will provide for their needs, and also for the overplus of regular students.

The United States Government pays us approximately $24.15 per month for each student who is given instruction outside of the regular college courses, and pays the regular fees for all. It is necessary to employ special additional instructions for teaching much of the Federal Board work, which ranges all the way from reading and writing to regular college instruction.

RESERVE OFFICERS' TRAINING CORPS:

The Reserve Officers' Training Corps (R. O. T. C.) offers not only an opportunity for service to the nation, but affords substantial help to the student body as a whole, and in particular to those juniors and seniors who elect to take the Advanced Course. Under the Morrill Act,—establishing Land Grant Colleges,—and the ruling of the War Department these colleges are required to give a minimum of three hours per week of military instruction for at least two years. As an adjunct to discipline, we have always required three hours military instruction per week during the entire four year course. Those students who enter the Advanced Course of the R. O. T. C. take the total five hours of military work during the junior and senior years, and in return get an allowance for subsistence which amounted last session to fifty-three cents per day. R. O. T. C. students of all classes received an allowance of $36.00 as commutation for uniforms. In all the Government paid on student uniforms during the fiscal year 1920-21 $20,968.00, and for subsistence $33,888.71, a total of $54,856.71.

THE FACULTY:

The work of the faculty during the year covered by this report has been very satisfactory. The spirit of co-operation and harmony so noticeable in the student body has been clearly evident among the teachers and officers of the college as well.

Our salary scale is yet probably lower than that of any other male college in the State, except the negro college in Orangeburg, and much lower than many of the
Land Grant Colleges. However, it is better than it has been in the past, and as a result there have been comparatively few resignations. There can be no thought of reducing salaries at this institution without the danger of disruption, because the trend of salaries at other institutions is still upward, and we are not yet up to the average level. This is shown by the following comparison, the average given below being compiled by the Bureau of Education in December, 1920 from 52 state universities and colleges:

<table>
<thead>
<tr>
<th>Deans or Assoc.-</th>
<th>Asst.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of 52 Colleges</td>
<td>$8324</td>
</tr>
<tr>
<td>Clemson College Averages</td>
<td>6000</td>
</tr>
</tbody>
</table>

In every case it will be noted that Clemson is below the average.

The housing situation is again becoming acute because of our increased force and the suspension of outside buildings. We need especially apartments suitable for young couples who are not prepared for housekeeping.

REVIEW OF DEPARTMENTS:

Organizations
The unit of organization at Clemson College is the subject-matter division—such as Mathematics, Architecture, Botany, Biology, Electrical Engineering, etc. These divisions are grouped into seven departments as follow:

Agricultural; Academic; Chemistry; Engineering; Military; Textile; and Student Affairs.

Several divisions, such as the Library, Treasurer’s office, Construction and Repairs, etc., are not grouped into departments, but are directly under the President.

The following directors presided over the above departments:

1. Agricultural Department——
   (a) Resident Teaching ------- Dr. F. H. H. Calhoun
   (b) Agricultural Research ---- Prof. H. W. Barre
   (c) Extension Service -------- Dr. W. W. Long
2. Academic Department -------- Dr. D. W. Daniel
3. Chemistry Department ------- Dr. R. N. Brackett.
4. Engineering Department ------------ Prof. S. B. Earle
5. Military Department ------------ Maj. J. M. Cummins
6. Textile Department ------------- Prof. C. S. Doggett
7. Student Affairs. -------------- Prof. D. H. Henry

These officers, with the addition of the Treasurer, S. W. Evans, and the Secretary of the Fertilizer Board of Control, Mr. H. M. Stackhouse, constitute what might be designated the President’s cabinet.

In the following review of departments it is not attempted to give all charges in personnel and details which have already been chronicled from time to time in my reports to the annual Board meetings. Only facts of outstanding interest will be included.

Last year, 1919-20, when so many college men left college teaching to go into commercial lines, Clemson had its share of losses. However, the score or more of new men who filled the vacated places proved in the main quite satisfactory.

The Academic Departments

The Academic Department includes four divisions—English, Mathematics, Physics, History, and Political Economy. This department is more directly related to the public school system of the State than are the purely technical departments. Upon the student’s school preparation depends very largely his progress in the subjects taught by this department. I regret to say that the majority of our students are not thoroughly prepared in two very important subjects given in all our courses—Mathematics and English. Comparatively few high school students have had any adequate preparation in Physics, Chemistry, or Manual Training.

The work of the Academic Department is good and steadily improving.

The only changes in personnel in the department were among teachers of subordinate rank.

The Agricultural Department—Resident Teaching:

I feel particularly proud of the teaching work now being done in our Agricultural Department, not because it is better than the work of instruction in other departments, but because it is so much better than that given at most other southern A. & M. colleges.
The work of the department in Agricultural Education is especially worthy of mention. Ten seniors graduated in this work, and this group included some of the very ablest men in the class. I feel very strongly that the greatest work the college can do is to train teachers, county agents, and other missionaries of agriculture. Ten graduates going out to teach agriculture in our schools more nearly justifies the existence of the college than five times that number going out to engage in work for their individual benefit.

At present our teacher training work suffers from the lack of a local high school able to give the necessary practice training to our students. It is hoped that this need will be supplied another session by the Calhoun-Clemson school situated within easy reach of the college. Until that is done the schools at Pendleton and Seneca furnish the nearest facilities.

The regular college work of training agricultural teachers has been supplemented by our summer school, which in 1920 gave instruction to 46 teachers, and this past summer to 68.

Good progress has been maintained in developing our Dairy and Swine Departments. As an evidence of the interest in the live stock teaching it should be noted that the Clemson stock judging team won first place at the Southeastern Fair.

Quite an important phase of the work of the Agricultural Department is the vocational agricultural work given to the disabled soldiers.

The Chemistry Department:

This department is charged with all the teaching of Chemistry, with the fertilizer analytical work, and the chemical investigations for the South Carolina Experiment Station. At the opening of the fiscal year 1921-22 Dr. R. N. Brackett became Station Chemist as well as State Chemist.

The department is well equipped, well manned with competent chemists, and in all lines the work was excellent.

It is significant of their interest that of the six students who majored in Chemistry under Dr. Brackett this past session four are pursuing post graduate work at large universities of the East and West.
The Engineering Department:

During the year covered by this report there was a very distinct drift away from the agricultural and towards the engineering courses. The percent of freshmen in the Freshman Class was 44.3 per cent in Agriculture, and 55.7 per cent in Engineering. Every proper effort is made to check this drift and turn as many new students as possible towards agriculture.

In spite of several changes in personnel the teaching work of this department has been up to its usual standard of excellence.

The fifty-foot addition to the east wing of the main engineering building was at last finished, and adds greatly to the teaching facilities of the department.

The Military Department:

The work of this department is fundamental to efficiency in all lines of work at Clemson. Unless discipline is well maintained the reflex is felt in every class room in the college.

Under the able administration of Maj. J. M. Cummins, as Commandant, the 1920-21 session was one of the most satisfactory in the history of the college. It is with great regret that we received the War Department's order relieving Maj. Cummins of this detail in order that he might attend the Officers School of the Line at Fort Leavenworth. With the session 1920-21 Maj. Cummins rounds out six years service as Commandant at Clemson. His first four-year detail was from May 23, 1912 to February 17, 1916. His second detail began Sept. 1, 1920 and expired Aug. 30, 1921, with the order to report to Fort Leavenworth. Maj. Cummins was a most efficient commandant. In his dealings with the cadets he was strict, but just and kindly, and he was keenly interested in everything that pertained to their welfare, as well as in the mere maintenance of military discipline. He is deservedly held by them in highest esteem. Six years of service in double harness with Maj. Cummins leads me to state without reservation that he is one of the most loyal, devoted, and efficient officers the college has ever had,—one who could be depended upon in every emergency. And Maj. Cummins was not only a good commandant,—he was a good Clemsonite as well,—a good citizen
of our college community,—a good neighbor. He and his family will long be held in affectionate remembrance here.

The enrollment in the R. O. T. C. for the session was as follows:

In Freshman and Sophomore Classes --------- 384
In Junior and Senior Classes --------------- 232

Total ------------------------------------ 616

This total is approximately 87 per cent of the students who are eligible, and represents one of the highest R. O. T. C. enrollments of any college in the country.

During the session the inauguration of week-end privileges as rewards for good conduct and good class standing had a markedly good effect.

Maj. Cummins was succeeded as Commandant by Maj. Madison Pearson, who for a year and a half had been Associate Commandant. Under Maj. Pearson we confidently expect a continuation of the high standard of discipline and military instruction set by Maj. Cummins. It was a crowning compliment to Maj. Cummins that during his last session here Clemson was ranked as one of the four "Distinguished" colleges of the Fourth Corps Area.

Much of the work of the Military Department is covered under the Chapter on Student Affairs, to which I refer you.

The Textile Department:

The renewed interest in textile education noted in my report of last year continued in 1920-21. Not including freshmen who are not differentiated between the several engineering courses, there were in the Sophomore, Junior, and Senior Classes 98 students in the textile course. Quite a number of disabled soldiers also are taking vocational work in this department. On the whole the outlook for this very well equipped department hitherto lacking in its full quota of students, is most encouraging. In the main instruction given is excellent.

Until July 1, 1921, Prof. Doggett acted as "State Supervisor of Industrial Education," this work embracing the night and part-time schools carried on in textile centers. He was assist-
ed in this work by the Professor of Industrial Education, Prof. H. B. Adams. We paid half the salary of these officers and Mr. Swearingen paid the other half.

Having thoroughly established the work, the State Superintendent of Education, Mr. J. E. Swearingen, and I have agreed to allow Prof. Doggett to return to full-time college duties and Mr. Adams will take the full responsibility and make his headquarters in Columbia. With the increase of students and general growth of the Textile Department in recent years, Prof. Doggett can no longer divide his time equally between the college and the school field. Hereafter, Prof. Doggett's salary will be paid entirely from college funds, and he will be connected with the outside work only in an advisory capacity. Mr. Adams will be paid entirely by the State Board for Vocational Education.

The Treasurer's Office:

The volume of work has greatly increased in this office during recent years.

Ten years ago the total funds actually handled amounted to $350,213.27; this year the total is $1,513,349.74. Much of the money for public service now comes from federal government necessitating the making of exhaustive and time-consuming reports.

As always, the work of the Treasurer and his assistants has been of a very high order. The State Bank Examiner speaks of the condition of the books and accounts as "excellent."

The Public Utilities:

The Construction and Repair Division is now well up with its schedule or repairs to residences and public buildings. The addition to the main engineering building, the calf barn, and the hog barn, aggregating in cost about $23,000, have been at last completed.

The cost of operating the Heat, Light, and Water Division during last fiscal year was $43,888.09. The price of coal with the freight added, is still nearly double pre-war prices, and our labor is only slightly reduced.

The two boilers which were moved from the engineering building to the power station have now been in use for twenty-
eight years and the boiler inspector states that twenty-three years is an average age for this type boiler. However, he has not condemned the two in question, and we shall continue to use them until he does.

Even with our present load, if we are to have reasonable insurance against accidents, it will be necessary to install another boiler engine and generator. Our engine and generator capacity is now over taxed. Prof. Earle estimates that it will cost approximately $25,000. to make these additions, and this addition is necessary now.

Our Telephone facilities are still inadequate, although somewhat improved. The Bell Telephone Co., has taken over this territory from the Oconee Telephone Co and has run a special line connecting us with their system at Seneca. They have also installed pay stations in the Guard Room and in the College Building which continue the long distance service after the local exchange has closed. These additions have improved our long distance service. As yet we have not been able to induce the Company to install a telephone exchange to serve the college community and contiguous territory. Such an exchange is greatly needed.

The college is fortunate in having a Campus equal in beauty to that of any college in the nation. It is a pity that money is lacking to properly develop it. However, under the general supervision of the Horticultural Division, great improvement has been made. The chief lack is a sufficient mileage of cement walks and hard surfaced roads.

As a Community, Clemson College suffers the disadvantage of being neither city nor country—lacking the facilities and amusements which characterize the city, and the abundance of food and fuel which characterize the country. There are no adequate markets within walking distance. When times become normal, and we have the money with which to do them, we should make it a policy not only to furnish the bare necessities of reasonable and comfortable living, but those comforts and conveniences which will make living at Clemson attractive as compared with other parts of the country. In this day of competition for the best men and women we will find ourself handicapped if we do not do everything we can looking to the comfort and contentment of our population.
The College Farm:
In January 1920 the college farm was transferred to the Experiment Station in order that the Agricultural work done might have a research as well as a utilitarian value. The farm raises on a cost basis the necessary feed stuffs for the dairy and animal husbandry division of the college and lends itself to experiments on a larger scale than is practicable on the limited lands of the present station. As heretofore, the farm will operate on a reinvestment basis, no appropriations being made for its support.

PART IV. THE PUBLIC SERVICE

The work of Clemson College is not confined to resident teaching. In fact an agricultural college is a great public service corporation, which must protect and serve the agricultural and industrial people of the State, as well as educate sons.

The public work of the college includes Regulatory Work, such as is required by law governing the movement of live stock, the control of contagious live stock diseases, the protection of buyers against diseased nursery stock and against plant diseases and insect pests, and the inspection and analysis of commercial fertilizers. This public work also includes the diffusion of agricultural information to the farmers and country children, stimulation of the schools by the offer of competitive scholarships, assistance in the school building program of the Department of Education by furnishing plans, etc., and in general is an effort to carry the benefits of the college to the largest possible number of people.

The total budget for public service nearly doubles the expenditures for the collegiate activities of the institution, and yet out of the total of $682,540.60 expended in 1920-21, the State’s part was only $186,480.80. This is less than 3 per cent of the total legislation budget of 1921 and represents the entire contribution of South Carolina to that industry in which practically 85 per cent of our people are engaged. The following statement shows the kinds of service performed and the source from which the money comes.
### EXPENDITURES FOR PUBLIC SERVICE FISCAL YEAR 1920.

<table>
<thead>
<tr>
<th>No.</th>
<th>Kind of Service</th>
<th>From College Funds</th>
<th>From State Appropria’n</th>
<th>From Federal Appropria’n</th>
<th>From U. S. Dept. Agri.</th>
<th>From Counties, Sales, Etc.</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Agricultural Research</td>
<td>$ 5,487.55</td>
<td>$35,988.90*</td>
<td>$30,000.00</td>
<td>$3122.56</td>
<td>$5,122.56 Sales)</td>
<td>$ 76,274.07</td>
</tr>
<tr>
<td>2.</td>
<td>Extension Service</td>
<td>81,070.00</td>
<td>130,297.88</td>
<td>40,300.00 (a)</td>
<td>151,256.93 (d) (Counties)</td>
<td>402,924.81</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Live Stock Sanitary Work</td>
<td>36,435.31**</td>
<td></td>
<td>14,218.42 (b)</td>
<td></td>
<td>52,648.73</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Tick Eradication</td>
<td>19,973.192</td>
<td></td>
<td>36,285.60 (c)</td>
<td></td>
<td>56,268.79</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Hog Cholera Serum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>37,920.59 (Sales)</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Crop Pest Commission</td>
<td>11,318.34§</td>
<td></td>
<td></td>
<td></td>
<td>11,318.34</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Fert. Inspec. and Anal</td>
<td>29,952.51</td>
<td></td>
<td></td>
<td></td>
<td>29,952.51</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Scholarships and Ads.</td>
<td>12,749.10</td>
<td></td>
<td></td>
<td></td>
<td>12,749.10</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Miscellaneous</td>
<td>2,483.36</td>
<td></td>
<td></td>
<td></td>
<td>2,483.36</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td><strong>TOTALS</strong></td>
<td>$50,652.52</td>
<td>$186,460.30</td>
<td>$160,297.88</td>
<td>$3,809.02</td>
<td>$194,300.38</td>
<td>$682,540.60</td>
</tr>
</tbody>
</table>

† Of this total Winthrop used $116,760.43 for Home Demonstration Work with Women.

* Appropriation for full calendar year 1921, $60,000.

§ Appropriation for full calendar year 1921, $10,000.00.

** Appropriation for full calendar year 1921, $50,000.00.

§ Appropriation for full calendar year 1921, $20,000.00.

It will be noted that lines of service 1, 2, 3, and 4 are carried on in co-operation with U. S. Dept. of Agri.

Item (a), (b), (c) in Column six are paid by the Treasurer of the U. S. and Item (d) in Column seven by County Treasurers, Chambers of Commerce, etc.,—all on vouchers approved by proper college officers.
AGRICULTURAL RESEARCH WORK:

Agricultural research is at the basis both of agricultural teaching and agricultural extension. One effect of the world war was to increase the public appreciation for research, whose value in the emergency was clearly demonstrated in concrete form. This public recognition has led to an increased demand for the services of the station, which demand the Agricultural Experiment Station has been unable to meet because of its lack of funds. With practically a fixed income from the Hatch & Adams Acts and greatly increased costs of salaries and materials, it was not possible to maintain even pre-war programs. In this emergency the college appealed to the Legislature for assistance and an appropriation of $25,000 in 1919 and $50,000 in 1920 was made. But for this appropriation the work during the past two years would have suffered greatly and much of it would necessarily have been abandoned.

The Agricultural research work of the S. C. Experiment Station includes:

1. The parent experiment station at the college,—this station including the college farm.
2. The branch stations located at Florence and at Summerville.
3. Co-operative agricultural research carried on with individual farmers.

A full account of these activities is contained in the very interesting report of the Director of the Experiment Station which is appended to this report as page 91. With the advance of the boll weevil and the necessity of diversification, there never was a time when agricultural research was more necessary than at present.

THE EXTENSION SERVICE:

The total fund available for extension service as shown in the preceding tabulation on page 29 was $402,924.81. Of this amount $40,300.00 was disbursed by the Treasurer of the United States, and $151,256.73 by the county treasurers. Of the total for extension service, Winthrop College expended on Home Demonstration Work for Women $116,766.43.
The terms of the Smith-Lever Act under which this work is organized is now too well known to need detailed exposition here. The following are its principal features:

1. Only a college receiving the benefits of the Land Grant Act of 1861 (the "Land Grant College) can be selected by the Legislature to administer the extension work provided for under the Act. (The Legislature in 1915 designated Clemson College to carry on this work.)

2. The funds arising under the Act cannot be used for educational work done at the college, but only for giving instruction and practical demonstrations in agriculture and home economics to persons not attending the college. (The college is merely the agent to administer the fund—not the beneficiary of it.)

3. For the maintenance of the work there is permanently appropriated $480,000 per annum, or $10,000 for each state which accepts the provisions of the Act. In addition, there is appropriated $600,000 for the second fiscal year of operation, 1915-16, and for each year thereafter for eight years, $300,000 additional, until a total of $4,100,000 is reached. This, with the $480,000 makes a total of $4,580,000 and continues as a permanent annual appropriation. Unlike the initial appropriation of $480,000 the additional appropriations are not equally divided among the states, but are to be allotted annually to each state in the proportion which its rural population bears to the total rural population of the United States, based on the last preceding census. They are also conditioned upon the state's making an equal provision.

Based on the 1910 census, South Carolina is entitled to 2.61 per cent of the additional appropriation. The 1920 census affecting the final appropriation is slightly more and gives South Carolina an advantage,—at least until the next census.

<table>
<thead>
<tr>
<th>From July 1st</th>
<th>Federal Appropriation</th>
<th>State Appropriation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1914—1st year</td>
<td>$10,000.00</td>
<td>$00,000.00</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>1915—2nd year</td>
<td>25,691.15</td>
<td>15,691.15</td>
<td>41,382.30</td>
</tr>
<tr>
<td>1916—3rd year</td>
<td>38,767.11</td>
<td>28,767.11</td>
<td>67,534.22</td>
</tr>
<tr>
<td>1917—4th year</td>
<td>51,843.07</td>
<td>41,843.07</td>
<td>93,686.14</td>
</tr>
<tr>
<td>1918—5th year</td>
<td>64,919.03</td>
<td>54,919.03</td>
<td>119,838.06</td>
</tr>
<tr>
<td>1919—6th year</td>
<td>77,994.99</td>
<td>67,994.99</td>
<td>145,989.98</td>
</tr>
<tr>
<td>1920—7th year</td>
<td>91,070.95</td>
<td>81,070.95</td>
<td>172,141.90</td>
</tr>
<tr>
<td>1921—8th year</td>
<td>104,146.91</td>
<td>94,146.91</td>
<td>198,293.82</td>
</tr>
<tr>
<td>1922—9th year</td>
<td>120,862.65</td>
<td>110,862.65</td>
<td>231,725.30</td>
</tr>
</tbody>
</table>
4. The Act further provides that the extension work is to be carried on in a manner mutually agreed upon by the Secretary of Agriculture, and the College. Before the Federal funds become available plans for the work must be approved in Washington.

Organization:

The Agricultural Department, with its divisions of agronomy, animal husbandry, botany, dairying, entomology, horticulture, chemistry, and veterinary science, is the machinery by which Agricultural Research, Extension, and Teaching are all carried on. Each division is under a chief, who is responsible for the successful prosecution of the work in these three lines of service. Prof. W. W. Long is director of Agricultural Extension Service; Prof. H. W. Barre of Agricultural Research; and Dr. F. H. H. Calhoun of Agricultural Teaching. In each division are grouped specialists in all three lines, teaching, research, and extension.

It is often suggested that the extension service ought to be located at some central point in the state. This view arises from a misapprehension of the nature of the extension service. The Extension Service of the college represents a service of the whole Agricultural Department, rather than a mere subdivision of it. It means the extension of the benefits of the Agricultural Department at the college beyond the confines of the campus to the people of the state.

There is a tendency too to confuse the regulatory work with the Extension Service. Actually there is little connection between them—often none. Our veterinary service, tick eradication, crop pest control, etc., are in no sense parts of the Extension Service. The one is primarily regulatory and the other is primarily educational. As a matter of fact, the Smith-Lever funds cannot be used for doing strictly regulatory work.

In accordance with an understanding with Winthrop College, 25 per cent of the Smith-Lever Extension Fund, both state and federal, together with county appropriations for that purpose, are devoted to Home Demonstration work with women and girls. Under the Smith-Lever Act and the laws of this state, the Extension Service of Clemson College is responsible for all forms of extension work in South Carolina.
However, there is no legal impediment to the designation of Winthrop College as Clemson's agency for carrying on the work for women and girls, and such an arrangement is both wise and logical. Miss Christine South, the State Agent in Home Demonstration, is located at Winthrop under the immediate supervision of President D. B. Johnson.

In order to have a fair division of funds between the counties in the state, the Trustees some years ago adopted the following standing rule:

"That after deducting the portion that goes to Winthrop College under the memorandum of understanding between Clemson College and Winthrop College, and after paying overhead expenses and the cost of specialists, the remainder of the Smith-Lever Fund be apportioned equally to the support of county agents in all counties of the State in which the work is carried on."

The greatest difficulty in extension service is to obtain and hold competent county agents. The average salary paid during the year was $2400.52, with an allowance of $400.00 for automobile travel. The cost of owning and operating an automobile, including depreciation is at least $600.00 per year.

Mr. Long's admirable report covering the Extension Service for the year is appended hereto. Its reading must convince anyone of the immense value of the Extension Service and its unique opportunity for service at this time of depression and demoralization among our farmers. The county agent system is the only organized agricultural machinery in South Carolina for promoting state-wide movements, for cotton warehousing, cotton marketing, and the like.

So thoroughly is this service entrenched in the estimation of the people that the trouble is to meet the many demands made upon agents and specialists.

The money which the state puts into extension service is a real investment returning an hundredfold in actual values the cost of the work.

LIVE STOCK SANITARY WORK:

The live stock sanitary work includes the following lines:
1. Tick eradication.
2. Tuberculosis eradication.
3. Hog cholera control.
4. Investigation and control of contagious outbreaks.
5. Quarantine against introduction of diseased live stock.

The importance of the live stock sanitary work has steadily grown with the advance of the boll weevil. An important item in the program of diversified farming to meet boll weevil conditions must be the introduction of a certain amount of live stock work on every farm. Until the tick could be eradicated and proper provision made to protect live stock against contagious importations and contagious outbreaks, it was not to be expected that farmers could be induced to purchase purebred live stock. If any evidence is needed of present interest in fine stock development it is found in the splendid display of beef and dairy cattle and swine at the state fair. “As the ticks go out, good cattle come in.”

Gradually the Live Stock Sanitary work, formerly located at the college, has been in process of transfer to Columbia, with Dr. W. K. Lewis, All live stock sanitary work will now be done under his supervision, and from the Columbia office.

The work is carried on by the State Veterinarian in Charge, a laboratory assistant, the necessary clerical and office force at Columbia and by twelve assistant state veterinarians in the pay of the state, and four veterinary inspectors in the employ of the Federal Government. The assistant state veterinarians are stationed about in the state at strategical points so as to be easily accessible to calls for assistance and for consultation by live stock owners. These veterinarians held 9322 interviews and consultations, investigated 3114 calls, and made 1136 sanitary surveys, and visited 4250 farms. Each veterinarian is required to own his own car and is allowed seven cents mileage for its use in service.

To give further service promptly 26 private veterinarians all over the state have been made deputy state veterinarians on a per diem basis. This, at a minimum of cost, greatly extends the possibility for prompt and ample service.

A full list of all employees in Tick Eradication and Live Stock Sanitary Work will be found in the report of the State Veterinarian on page 157.
By the U. S. Department of Agriculture—$465,464.19
By State appropriations ------------ 216,000.00
From Clemson College funds ----------- 54,104.00
From county contributions (1913) ------ 1,083.00

Total -------------------------------- $736,651.14

Since the State's fiscal year extends from January 1st to the following December 31st, the State Veterinarian's report is made from January 1, 1919 up to November 1. Attention is directed to this fact because most of the other reports are for the college fiscal year, July 1st to the following June 30th.

The work of Tick Eradication was begun in South Carolina on small college funds in 1907. Up to November 1, 1921 the following total expenditures were made for this work:

With this expenditure the entire state has been released from federal quarantine and the state cleared of cattle tick except in Coast counties. In most of these counties, free range conditions have existed ever since tick eradication began. Under free range conditions the only practical method of tick eradication is to drive up the cattle periodically and dip them. This process of clearing a given territory is one of infinite slowness and uncertainty. With the state-wide stock law effective January 1, 1922, the complete clearing of the state should be speedily accomplished. In seven counties "clean up" work is still going on, but this should be completed this year and next.

The work of Tuberculosis Eradication in dairy herds has been very successful. Since 1917, when this work was begun, 1578 herds, aggregating 35,512 cattle, have been tested; 632 were found infected. Sixty-six herds in South Carolina are now accredited, and 463 herds have passed the first test necessary to being accredited.

No work has been more important or needed than the control of Hog Cholera which is most prevalent in the lower part of the state. In all, 49,889 head of hogs were inoculated with serum and bacterins. It is the policy of our service to distribute hog cholera serum and other bacterins at cost, reinvesting the amounts received in additional serum. The
total sales for the fiscal year, as shown by the sales records of the State Veterinarian, amounted to $41,953.26.

Other Contagious Diseases in addition to hog cholera and tuberculosis were promptly investigated by our veterinarians.

CROP PEST COMMISSION.

The Crop Pest Commission is constituted under the laws of the State of South Carolina to safeguard the agricultural interests against the importation of diseased seed and nursery stock, and to combat insect pests and plant diseases. The Agricultural Committee of the Board constitutes the Crop Commission. Mr. J. E. Wannamaker, of St. Matthews, is the Chairman.

The Legislature, at its session in 1920, for the first time made an appropriation for financing this work, the college finances not being equal longer to carrying the burden. This appropriation is necessary to pay the salaries of the experts including part salary of the State Entomologist and the State Pathologist, the salaries of inspectors, travel, cost of nursery tags and other supplies, and the cost of the clerical work incident to the large correspondence and service rendered by the Commission. The Crop Pest Commission constitutes, as it were, the "Agricultural Board of Health" of the state, and no investment which the state makes brings larger results by way of protection and actual returns to the farmers than the above appropriation.

The report of the State Entomologist and the State Pathologist, which is attached hereto, is very interesting as showing the wide scope of the work and the efficiency with which it was done. The state is now completely infested with the Mexican boll weevil, but outside of our borders are a number of pests which will do great damage if not kept out by strict quarantine. Among these may be mentioned the pink boll worm now established in Texas and Louisiana, the European corn borer which is causing trouble in the New England states, the Japanese beetle introduced into New York and Pennsylvania, and the brown tail and Gipsy moths which occur here and there in the northern states. The sweet potato borer prevalent in Florida and Georgia, is a real menace
to the sweet potato industry and must be kept out by vigilence and strict quarantine laws. Among the plant diseases the prevalence of cotton anthracnose and cotton wilt exact large penalties.

Great progress has been made recently in getting uniformity in our regulations. Conferences between the Entomologists of the southern states have led to the adoption of regulations as nearly uniform as the different state conditions would permit.

FERTILIZER INSPECTION AND ANALYSIS:

Under the laws of the state, the Board of Trustees of Clemson College is charged with the inspection and analysis of all commercial fertilizers sold within the state. The Board of Trustees delegates its authority to a special committee known as the “Board of Fertilizer Control” which gives special oversight to enforcing the fertilizer laws. This Board of Control consists of Messrs. Richard I. Manning, Chairman; J. E. Wannamaker, H. C. Tillman, J. J. Evan, and the Chairman of the Board of Trustees, Hon. Alan Johnstone, ex officio.

The work of inspection is under the immediate charge of Mr. H. M. Stackhouse, Secretary of the Board of Fertilizer Control and the analytical work is done in the Chemistry Department under the supervision of the Chief Chemist, Dr. R. N. Brackett. A full report from each of these officers accompanies this paper.

Mr. Stackhouse reports 1920-21 sales as 526,416 tons of fertilizer and 89,964 tons of cotton seed meal. The total tonnage was 616,280 as compared with 1,253,890, in 1919-20,—about half as much.

The total number of samples collected by the twelve inspectors who were in the field was 799, as compared to 1,802. Of these only 36 were farmers’ samples.

The season of 1921 was very late in beginning, the movement of fertilizers not beginning until after the middle of March. Cotton seed and acid were the principal ingredients used.

It is notable that with the return of kainit and other foreign brands, American Potash seemed to have disappeared from the market.
AGRICULTURAL AND TEXTILE SCHOLARSHIPS:

Under the laws of the state the total number of scholarships offered at Clemson is 170 four-year scholarships and 53 one-year agricultural scholarships. Of these scholarships only 80 of the regular four-year scholarships and 10 of the one-year agricultural scholarships were filled. This left 90 four-year and 43 one-year places vacant.

Of the total number of scholarships filled 63 per cent were held by farmers' sons and the remainder by the sons of merchants, professional men, etc.

During recent years there has been a steady decline in the demand for scholarships, probably due until this past session to the increased prosperity of the times. Also the lessened proportional value of the scholarships, and the more rigid scrutiny by the State Board of Public Welfare has made the scholarships less sought after. It might be interesting to know that since the establishment of the scholarships in 1904 the college has had to expend from its current funds $276,967.38 for their maintenance, the Legislature making no appropriation for the scholarships at Clemson as it does for other state institutions.

The one-year agricultural course is a most useful one to prepare young men to become practical farmers, and yet it has always been difficult to get an appreciable attendance for such a course. It is hoped that through the increased efforts of the home demonstration agents and the county agents that more students will enter this course in the future.

CO-OPERATIVE WORK UNDER THE SMITH-HUGHES ACT:

The purpose of the Smith-Hughes Act is to stimulate vocational training by the schools of the state. The first requirement for success in this movement is competent teachers. With the creation of the Division of Agricultural Education four years ago, the college sought to meet a pressing need by training graduates in agriculture to teach successfully in the high schools established under the Smith-Hughes Act. Not only are teachers of agriculture trained at the college, but the work of the division includes cooperative work with the Superintendent of Education in assisting the schools
by the preparation of suitable leaflets and texts to be used in connection with teaching agriculture. The work of the regular session was also supplemented by a summer school at which competent teachers of academic subjects could be given the necessary technical training to prepare them for agricultural teaching. Also, beginning with the session of 1918-19 Prof. C. S. Doggett, Director of the Textile Department, began the organization of industrial education in various mill centers in the state. In this work he was assisted by Prof. R. B. Adams, and both of these officers received part salary from the college and part from the Smith-Hughes fund. In order to get teachers who were acquainted with the textile industry and allied subjects, it was necessary to take men already trained in these lines and who had sufficient education and give them the additional coaching needed to qualify them to teach.

In South Carolina there are two main lines of industry—agriculture and textiles. For that reason the Smith-Hughes work has been directed into these two fields. In time to come it will no doubt be desirable to organize instruction in other lines, but at present that seems hardly necessary.

This work is almost entirely financed by Smith-Hughes funds through the State Board of Vocational Education. The expenditures for the year, $17,683.76, were paid by the College and reimbursed by the State Board at the end of the fiscal year.

Wherever the work of the college extends into the school field, that phase of its work is under the supervision and direction of the State Superintendent of Education, Mr. J. E. Swearingen, to whose hearty cooperation and wise counsel we are greatly indebted for such success as has been attained.

MISCELLANEOUS:

In addition to the lines of public service described in this chapter, the college in its Textile Department manufactures and sells at cost South Carolina flags.

In the Drawing Division of the Engineering Department plans for rural school buildings are prepared and distributed without cost. The State Superintendent of Education has
stated repeatedly that this assistance to the school-building program of the state has been the most important single contribution of the college to the schools. It is to be regretted that larger funds are not available so that field inspection and supervision could be given to the making and carrying out of these plans.

PART V. STUDENT LIFE AND INTEREST

THE COST OF EDUCATION AT CLEMSON:

It has always been the purpose of the Board of Trustees to keep the cost of education at Clemson as low as possible consistent with reasonable contentment and efficiency.

The rapid rise in the price of provisions and labor, together with the complaints heard during the spring of 1920, necessitated an increase in the charge for board to $20.00 per month. Laundry supplies, coal and all other items entering into the living expenses of the students had also increased, and uniforms were at peak prices.

The following is an exhibit of the charges for the session covered by this report:

FOR SESSION OF NINE MONTHS

1920-21

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board—9 mos. @ $20.00</td>
<td>$180.00</td>
</tr>
<tr>
<td>Laundry—9 mos. @ $1.65</td>
<td>14.85</td>
</tr>
<tr>
<td>Heat, Light and Water—9 mos. @ $2.25</td>
<td>20.25</td>
</tr>
<tr>
<td>Medical fee—9 mos. @ $1.35</td>
<td>12.15</td>
</tr>
<tr>
<td>Incidents—9 mos. @ $1.00</td>
<td>9.00</td>
</tr>
<tr>
<td>Matriculation fee</td>
<td>3.00</td>
</tr>
<tr>
<td>Laboratory fee</td>
<td>2.25</td>
</tr>
<tr>
<td>Breakage fee</td>
<td>3.00</td>
</tr>
<tr>
<td>Student Activity fee</td>
<td>12.00</td>
</tr>
<tr>
<td>Uniforms (dress and service)</td>
<td>84.90</td>
</tr>
</tbody>
</table>

Total for 9 months $341.40

This gives an average maximum cost of $1.26 per day during the session for those cadets who do not pay tuition. Tuition ($40.00) is not included in the above analysis because only about half the student body pays it.
The average cost of uniforms to students after the first year is usually not more than one-third of the item given above.

R. O. T. C. students in all classes received from the War Department $36.00 as commutation for uniforms. Junior and Senior students in the advanced course R. O. T. C. received about $147.00 as commutation for subsistence, as well as the $36.00 on uniforms.

For 1921-22 the board has been reduced to $18.00 per month, the laundry to $1.50 per month, and the cost of uniforms to $28.15, making the total cost for 1921-22 $239.90 for the nine months session.

THECADETFUND:

The following is a statement of the Cadet Fund for 1920-21:

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Received</th>
<th>Expended</th>
<th>Balance</th>
<th>Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Subsistence</td>
<td>$154,847.53</td>
<td>$148,550.83</td>
<td>$6,296.70</td>
<td>$-</td>
</tr>
<tr>
<td>2</td>
<td>Uniforms</td>
<td>36,351.70</td>
<td>36,734.20</td>
<td>-</td>
<td>382.50</td>
</tr>
<tr>
<td>3</td>
<td>H. L. &amp; W.</td>
<td>13,639.14</td>
<td>13,532.53</td>
<td>106.81</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Laundry</td>
<td>14,809.67</td>
<td>14,809.67</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Hospital</td>
<td>9,505.17</td>
<td>9,499.74</td>
<td>5.43</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Incidental</td>
<td>5,902.10</td>
<td>5,190.76</td>
<td>711.34</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Breakage</td>
<td>2,284.36</td>
<td>2,284.36</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Diplomas</td>
<td>624.75</td>
<td>641.33</td>
<td>-</td>
<td>16.58</td>
</tr>
<tr>
<td>9</td>
<td>Student Act. Fee</td>
<td>8,478.58</td>
<td>8,554.96</td>
<td>-</td>
<td>76.38</td>
</tr>
</tbody>
</table>

Totals $246,443.00 $239,798.18 $7,120.28 $475.46

Net balance on 1920-21 business $6,644.82

SUMMARY TO JULY 1, 1921.

Brought forward, July 1, 1920 $3,362.65
Bills payable, replacements, etc. 2,158.98

$1,203.67

Balance on 1920-21 business $6,644.82

Carried forward, July 1, 1921 * $7,848.49

*Note: This represents net balance of 1-2 of one per cent of $1,517,221.44, covering a period of ten years (July 1, 1911 to July 1, 1921), and represents about 13 days board.
It has been the policy of the college to give back to the cadets in service all that they pay. Of course it would be neither legal nor proper to use college funds (further than the scholarships created by law provide) to pay for the living expenses of the students, and this is not done.

THE MESS HALL AND KITCHEN:

During a session, approximately 562,000 meals are served in the mess hall to the cadets. It would take a family of five 102 years to serve as many. It is not only possible but likely, that once in a while something will go wrong. However, an inspection of this great dining room and kitchen will convince any one that nothing is left undone to give the best service possible for the price paid. At $20.00 per month the amount available per meal is only 22 cents, out of which must come labor, supervision, fuel and other costs, as well as food. No detail of the college organization has received more attention than the mess hall during the past few years, and its equipment and refrigeration facilities are the very best. A tile floor throughout was laid during the summer of 1920 and is the last detail necessary for ideal conditions.

On January 18th, 1921, fire partially destroyed the kitchen, commissary, dishwashing and serving room, and damaged or destroyed a large part of the equipment. With the insurance collected and some additional expenditure the damage was repaired and now we have one of the best culinary plants in the country,—one large enough to handle twice our present attendance. Mr. Harcombe, our new mess officer, gave excellent satisfaction throughout the session.

BARRACKS ACCOMODATIONS.

In regard to living conditions in the barracks, I quote the following paragraph from a report of Col. Cummins to me, which was incorporated in my report to you last year:

"Barracks conditions that have to do with the comfort and convenience of the cadets cannot be surpassed in this section of the country. I was sent on an inspection tour in connection with R. O. T. C. work to ten institutions in Tennessee, Georgia, North and South Carolina, and in no place that I visited
were the appointments and arrangements comparable to those that we have here. The students in a good many of these institutions sleep in double-deck beds, in small rooms, and have a mess that does not compare favorably at all with the mess at the college. The cadets here are in great good fortune that they have such comfortable and convenient quarters."

CADET HOSPITAL:

Dr. A. M. Redfern, the college surgeon since the opening of the college in 1893, resigned September 1920, on account of ill health. For over a quarter of a century Dr. Redfern has efficiently looked after the health of the Clemson student body. Both as a doctor and as a man Dr. Redfern is held by students and faculty alike in grateful and admiring remembrance.

Dr. Geo. D. Heath (U. S. A. retired) of Chester, was elected to succeed Dr. Redfern. Dr. Heath has had both army and civilian experience, which should particularly well qualify him for the work at Clemson.

Our present hospital while enjoying a wonderful record for efficient service, is subject to the criticism of being out of date. When built, nearly thirty years ago, it was doubtless considered entirely adequate.

The Board therefore, in 1914, made the necessary appropriation to build a new and up-to-date hospital on the beautiful site overlooking Bowman Field. The plans were completed and the brick delivered at the site, when the world war broke out. The price of cotton dropped, and with it our fertilizer tax, so that it has been impossible to go forward with the project. There being no prospect of building a new hospital in the near future, the Board at its meeting in July 1920 made a substantial appropriation to put in a steam heating system and make needed internal changes and improvements. These have been finished and add greatly to the appearance and utility of our old hospital. During the session quite a good deal of surgical and hospital equipment has been purchased, a full-time trained nurse added to the staff, and in general much improvement made.
HEALTH AND SANITATION:

As before stated, we have gone through this year without an epidemic of any kind, despite the fact that both influenza, mumps, and measles made their usual appearance. This has been due largely to Dr. Heath’s policy of requiring cadets who were at all sick to remain in the hospital, and not circulate among the student body on an excused-from-duty status.

The total number of separate hospital cases was 303, which is a reflection of the above policy. The average length of detention in the hospital was 3½ days. In point of numbers, ordinary colds led with 91 cases, and tonsilitis came second with 36 cases. Eleven serious cases necessitating operations or special treatment were sent to other hospitals. There were two serious accidents during the year—Cadet G. C. Albright, of Laurens, having his leg broken in football; and Cadet W. C. Cook, of Kershaw, losing an eye in an accident in the chemical laboratory. There were three or four serious cases of pneumonia and pleurisy, but none proved fatal. The only death occurring was that of Cadet J. R. Inman of Charleston, who died of typhoid fever June 18, after being taken home sick at the end of the session.

The hospital has been kept in immaculate condition, fully up to army standards of cleanliness. The additional equipment approved at a previous meeting has gone to good purpose, and Dr. Heath now has an equipment which will take care of anything except extensive epidemics. In fact, the present condition of the hospital makes it less necessary than before to proceed with building a new one.

Dr. Heath added a trained nurse to the hospital staff, and one of the students who had been in the medical service took the place of interne formerly filled by Mr. Gordon, who died during the summer of 1920. These, with a maid, cook and janitor, make up the hospital force.

DISCIPLINE:

The importance of discipline has been elsewhere emphasized in this report.

Our method of administering discipline under our new
regulations, which give to the Commandant and the cadet the opportunity to agree upon a punishment without trial by the Discipline Committee, has worked very well indeed. Twenty or more cases have been thus accounted for which otherwise would have consumed the time and attention of the Discipline Committee.

The following is the demerit record of the corps of cadets for the three terms of the session:

During the first term 432 cadets, or 62 per cent of the corps, received less than twenty demerits, the limit beyond which a cadet is excluded from the honor roll. During the second term 71 per cent, and during the third term 70.5 per cent attained the same standard. An average of 454 students, or nearly one-third of the corps, had perfect term records—i. e., no demerits.

During the first term, seven cadets exceeded the limit of demerits; during the second term only one exceeded it; and during the third term six exceeded the term and sessional limits. In other words, out of the total of corps in barracks only eleven failed to meet the standard required for remaining in college.

During the session the Discipline Committee tried ten cases; six were found guilty and four acquitted. Of the six found guilty, two were dismissed, three suspended, and one given local punishment.

RELIGIOUS INFLUENCES:

Four churches representing the Presbyterian, Methodist, Baptist, and Episcopalian denominations, are located near the college and cadets worship in the churches of their choice every Sunday morning during the session. Chapel services are held in Memorial Hall every morning except Saturday and Sunday. The college contributes $500 to the salary of each of the four resident ministers, and in return they do pastoral work among the students in barracks. The college also contributes $500 to the salary of the general Y. M. C. A. Secretary. Attendance upon chapel and church service is required, except in the case of Catholics and Jews, who have no churches at the college.
RECREATION AND STUDENT AFFAIRS:

Play is necessary as well as work in a well rounded college life. The college plant includes along with class rooms and laboratories, proper facilities for rest and recreation. The Y. M. C. A. building, with its swimming pool, bowling alleys, etc.; the Bowman athletic field, and Riggs Field, 400 by 1,000 feet, furnish ample facilities for healthful outdoor exercises. Among the principal lines of student activities, in addition to the various lines of athletics, may be mentioned the six literary societies, class dance clubs, and the student publications—The Tiger, The Chronicle, and Taps.

The Student Activity Fee has been a great thing for the student body, as well as for the parents. For a fixed sum, which parents can know in advance, all cadets have had free admission to college activities and received without further charge the regular college publications. This democratization of college opportunity has resulted in increased pleasure for the students, and an increased interest in all those affairs with which students should properly concern themselves.

Prof. D. H. Henry, occupying for the first year the newly created position of Director of Student Affairs, has had general oversight of all student activities and the administration of the Cadet Fund. He has discharged his duties with efficiency and to my entire satisfaction.

The Encampment of the cadets at the State Fair passed off successful in every way. The cadets behaved well and there was no sickness or accident.

PART VI. APPROPRIATIONS FOR PUBLIC SERVICE—1922.

In accordance with the practice of twenty-five years, the college is not asking appropriations for its collegiate work. Its recommendations are confined to those non-collegiate activities which the Legislature has been supporting. This represents about 5 per cent of the total taught and is the State’s sole direct contribution for agricultural betterment
in a commonwealth 85 per cent of whose people are engaged in agriculture.

The following is a list of the appropriations granted in 1921 and our recommendations for 1922:

<table>
<thead>
<tr>
<th>Lines of Service</th>
<th>Appropriated in 1921</th>
<th>Recommended for 1922</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Extension Service</td>
<td>$94,147.15</td>
<td>$110,862.65</td>
</tr>
<tr>
<td>2. Agricultural Research</td>
<td>50,000.00</td>
<td>50,000.00</td>
</tr>
<tr>
<td>3. Tick Eradication</td>
<td>20,000.00</td>
<td>20,000.00</td>
</tr>
<tr>
<td>4. Live Stock Sanitary Work</td>
<td>50,000.00</td>
<td>50,000.00</td>
</tr>
<tr>
<td>5. Crop Pests &amp; Diseases</td>
<td>10,000.00</td>
<td>10,000.00</td>
</tr>
<tr>
<td>6. Slaughter of Diseased Stock</td>
<td>2,000.00</td>
<td>2,000.00</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$226,147.15</strong></td>
<td><strong>$242,862.85</strong></td>
</tr>
</tbody>
</table>

These lines of public service are so well established and so well known and depended upon by our people, I am sure that no lengthy explanation is necessary. Therefore, I will make only a brief and concise statement in regard to each.

1. The *Extension Service* item is the only one in the list which has been increased, and this increase is made necessary by the provisions of the Smith-Lever Act, which were acceded to by the General Assembly in 1912. With this increase the amount to be appropriated annually now becomes stationary at $107,342.99. The Federal Government matches the state appropriations dollar for dollar, with $10,000.00 added. Not to do our part would of course involve us in the loss of an equal amount from Federal sources.

With the coming of the boll weevil into South Carolina it is necessary for the Extension Service to take the leadership in lines of diversification. It will be most advantageous for us to add an additional specialist in plant breeding, who would specialize in community cotton growing so that an ample supply of cotton seed of the right variety for planting under boll weevil conditions may be produced. Tobacco must also play an important part in some sections of our state, but at present our people lack experience and training to go into this new line. As an example: the tobacco crop of Sotuh Carolina in 1921 averaged only 7 cents per pound, while the average price of North Carolina and Virginia to-
bacco was over 15 cents. This would indicate the necessity for teaching our people to raise tobacco of better quality, and market it more intelligently. Peanuts are also attracting attention as a substitute crop and we need a specialist in the field who has had actual experience and the proper training in peanut production. Also, we need farm management specialists to assist the farmers in working out questions of cost of production and other farm management problems. Never was the demand upon our Extension Service more insistent, and if we are to render additional service it can only be done if we have additional funds.

2. Agricultural Research is at the foundation of the agricultural prosperity of the State. The usual appropriation here requested represents the only money spent by South Carolina in solving its agricultural problems. Without Agricultural Research the Extension Service would have little to extend, and the instructors little to teach. Other than the state appropriations research is supported only by $30,000 through the Federal Hatch and Adams Fund. But for the Legislative appropriation a large part of the agricultural experiment station work at the College and at the branch stations at Summerville and Florence would have to be abandoned right at the time when our people are most in need of guidance along new paths. I quote the following interesting statement from report to me by Director Barre:

"The agricultural research workers in South Carolina during the past thirty years have in a large measure pointed the way to improved practices which have been instrumental in increasing and cheapening production, and improving the quality of our products, and in the general advancement of our agriculture. Soil fertility and fertilizer studies have yielded results which can not be measured in dollars and cents. Control measures for diseases and insects are resulting in millions of dollars saved each year. Plant diseases alone take a toll of twenty million dollars a year in this state. Cotton anthracnose, the most important plant disease in the state, is now practically under control, as results of the work of this station, and a saving of more than a million dollars a year to our people is the result."
“It is during periods of uncertainty and depression that agricultural research is most appreciated, and the results of the experiment station work are most in demand. Our workers are looked to as the chief technical advisors along all agricultural lines, and then can only direct this great enterprise along safe and sound lines in so far as they have scientific data upon which to base their conclusions and recommendations. Reliable agricultural information can of course be derived only from intelligently planned and carefully conducted experiments.

“The agricultural products of South Carolina for 1919 were valued at five hundred seven million dollars ($507,000,000) and those of 1920 at two hundred eighty-two million dollars ($282,000,000). If only one-tenth of one per cent of this latter amount could be devoted to finding out new facts about this, our chief industry, many puzzling problems which are now retarding the progress of our people could be solved and our future agricultural development assured. The average income from agricultural products in South Carolina in 1920 amounted to nearly forty-one dollars ($41.00) per acre for each acre of cultivated land. Less than one cent per cultivated acre was spent for agricultural research.

“We should ever keep in mind that anything that increases and cheapens production, benefits the whole people. It not only increases the profits of the producers, but it furnishes necessities for the consumer at a lower cost.”

3. The item for Tick Eradication remains unchanged. But for the free range conditions existing in the lower counties tick eradication in South Carolina would now be completed. With the state-wide stock law going into effect January 1st, a rapid completion of this work may be expected.

4. The Live Stock Sanitary Board which is in charge of the live stock sanitary work, is to live stock what the State Board of Health is to humans. Protection against the importation of diseased live stock, the control of contagious outbreaks such as hog cholera, anthracnose, blackleg, etc., and the testing of dairy cows for tuberculosis are a few of the activities of our sanitary office located at Columbia. With the necessity under boll weevil conditions of turning to a more diversified agriculture, the amount and value of live stock has steadily increased. This is testified to by the excellent live stock exhibits at the last state fair. In reality
our live stock industry is one of our principal assets, and exceeds our cotton crop in value. As the industry increases the demand for veterinary service also increases. We have not increased the usual appropriation, which represents less than one-tenth of one per cent of the value of the live stock in South Carolina expended for its protection.

5. For Crop Pest and Diseases no increase is requested, $10,000 is sufficient to carry on this work efficiently. Perhaps no single appropriation for control work is more important or productive than this. But for the vigilence of the State Entomologist and State Pathologist, and their assistants, South Carolina would soon be flooded with plant diseases and crop insect pests brought into the state through diseased plant and nursery stock. Many of these are now almost at South Carolina’s door and some of them have even gained a foothold. There is no agency but the Crop Pest Commission to guard the state from their ravages.

6. Reimbursement of live stock owners for animals destroyed in the control of contagious diseases is required by law. Because of the increase of interest in dairy cattle free from tuberculosis, the amount of last year’s appropriation was not sufficient to pay all claims in 1920-21. The amount asked for is really insufficient, but we have thought it best not to increase the item, but to rely upon the Governor’s contingent in case of necessity.

In presenting these appropriations the College does not come as a suppllicant, begging that they be made. The College regards itself rather as an agent of the Legislature to carry out willingly and efficiently whatever amount of public service the General Assembly is willing to support. The duty of the College is done when it presents these needs. It is for the Legislature to say how much of the service indicated by us as needful shall be done.
PART VII. THE PRESENT SESSION, 1921-22.

ATTENDANCE 1921-22:

At the time of writing this report, December 10th, we are in the midst of another fiscal year and another college session. In addition to the record of 1920-21, contained in the first five chapters of this report, a few words regarding present conditions will not be amiss.

Clemson’s average sessional enrollment for the past five years is 843. The total enrollment to date (Dec. 10, 1921) despite the hard times, is 994,—the largest in the history of the college. The total for the session will probably reach 1025. With the 1921 Summer School the enrollment to date is 1295. The distribution of the 994 students enrolled this session, by counties, is as follows: Abbeville 17; Allendale 10; Aiken 15; Anderson 83; Bamberg 12; Barnwell 10; Beaufort 10; Berkeley 7; Calhoun 13; Charleston 44; Cherokee 14; Chester 29; Chesterfield 8; Clarendon 10; Colleton 10; Darlington 17; Dillon 17; Dorchester 5; Edgefield 6; Fairfield 13; Fairfield 13; Florence 16; Georgetown 6; Greenville 56; Greenwood 31; Hampton 16; Horry 15; Jasper 2; Kershaw 9; Lancaster 10; Laurens 22; Lee 3; Lexington 13; Marion 13; Marlboro 18; McCormick 10; Newberry 37; Oconee 53; Orangeburg 38; Pickens 40; Richland 32; Saluda 7; Spartanburg 50; Sumter 17; Union 24; Williamsburg 12; York 39. The distribution by states and foreign countries is as follows: South Carolina 939; Alabama 3; Arkansas 1; District of Columbia 3; Florida 5; Georgia 11; Louisiana 1; Maine 1; North Carolina 19; New Jersey 1; New York 1; Oklahoma 3; Tennessee 1; Virginia 1; West Virginia 1; France 1; British West Indies 1; India 1.

Greatly needed is a new dormitory to prevent the present overcrowding occasioned by this large attendance. Clemson’s growth and usefulness to South Carolina is being curtailed by a lack of sufficient facilities, especially dormitories and buildings for teaching. With the same overhead organization we could handle 1,500 students as well as 900, and the cost per capita would be greatly reduced. It would be easy
to increase to 1200 students in the next three or five years if we only had the necessary additional dormitories and accompanying facilities for teaching, and a comparatively small increase in our maintenance fund. Our plant for handling even our present enrollment is incomplete and in some essential respects inadequate.

The following is an estimate of the cost of additional buildings and operating expense for increased attendance and confirms the recommendations of the experts to the Committee on Economy and consideration that Clemson should have $100,000 per year for 10 years or $150,000 for six or seven years.

**NEEDED BUILDINGS.**

<table>
<thead>
<tr>
<th>BUILDING</th>
<th>Present Attendance</th>
<th>1200 Attendance</th>
<th>1500 Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laundry</td>
<td>$10,000.00</td>
<td>$10,000.00</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>H. L. &amp; W. Additions</td>
<td>25,000.00</td>
<td>50,000.00</td>
<td>65,000.00</td>
</tr>
<tr>
<td>Hospital</td>
<td>50,000.00</td>
<td>50,000.00</td>
<td>50,000.00</td>
</tr>
<tr>
<td>Gymnasium</td>
<td>125,000.00</td>
<td>125,000.00</td>
<td>125,000.00</td>
</tr>
<tr>
<td>Live Stock Pavillion</td>
<td>10,000.00</td>
<td>10,000.00</td>
<td>10,000.00</td>
</tr>
<tr>
<td>Dormitories</td>
<td>75,000.00 (1)</td>
<td>150,000.00 (2)</td>
<td>225,000.00 (3)</td>
</tr>
<tr>
<td>Library</td>
<td>50,000.00</td>
<td>50,000.00</td>
<td>50,000.00</td>
</tr>
<tr>
<td>Physics &amp; Elec. Bldg.</td>
<td>75,000.00</td>
<td>75,000.00</td>
<td>75,000.00</td>
</tr>
<tr>
<td>Shop Building</td>
<td></td>
<td>30,000.00</td>
<td></td>
</tr>
<tr>
<td>Chemistry Building</td>
<td>1,000.00</td>
<td>30,000.00</td>
<td></td>
</tr>
<tr>
<td>Textile Addition</td>
<td>1,000.00</td>
<td>50,000.00</td>
<td></td>
</tr>
<tr>
<td>Ent. &amp; Hort. Bldg.</td>
<td>50,000.00</td>
<td>50,000.00</td>
<td></td>
</tr>
<tr>
<td>Research Greenhouse</td>
<td>5,000.00</td>
<td>5,000.00</td>
<td></td>
</tr>
<tr>
<td>Agri. Hall Addition</td>
<td></td>
<td>50,000.00</td>
<td></td>
</tr>
<tr>
<td>Addition to Chapel</td>
<td>25,000.00</td>
<td>25,000.00</td>
<td></td>
</tr>
<tr>
<td>Addition to Mess Hall</td>
<td>10,000.00</td>
<td>10,000.00</td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>$295,000.00</strong></td>
<td><strong>$612,000.00</strong></td>
<td><strong>$860,000.00</strong></td>
</tr>
<tr>
<td>Increased Equipment</td>
<td></td>
<td>28,850.00</td>
<td>42,300.00</td>
</tr>
<tr>
<td><strong>$295,000.00</strong></td>
<td><strong>$640,850.00</strong></td>
<td><strong>$902,300.00</strong></td>
<td></td>
</tr>
</tbody>
</table>

**INCREASED COLLEGIATE OPERATING COST**

<table>
<thead>
<tr>
<th>Total Operating Costs</th>
<th>Per Capita Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>For present attendance of 900</td>
<td>$296,935.09</td>
</tr>
<tr>
<td>For an attendance of 1200</td>
<td>332,865.09</td>
</tr>
<tr>
<td>For an attendance of 1500</td>
<td>347,685.09</td>
</tr>
</tbody>
</table>
PART VIII. THE FINANCIAL FUTURE OF THE COLLEGE.

THE FINANCIAL PROSPECT.

The college is confronted by a serious financial crisis.

The fertilizer tax during the fiscal year 1920-21 reached $154,505.16. With $13,000.00 in penalties added the total income from this source was $167,505.16. This is the second lowest figure in the past fifteen years. The only lower figure was in 1914-15 when the tax dropped to $155,859.76. This was the year following the "Buy-a-Bale" movement.

The fertilizer tax for the calendar year 1921 was approximate very closely $150,000.00. Under an act passed by the last General Assembly, we have borrowed $112,842.11 from the State Treasurer.

ESTIMATED EXPENDITURES FOR FISCAL YEAR 1922-23.

The budget of the college work for the fiscal year 1922-23, including the cost of fertilizer inspection and analysis and scholarships, and not including any buildings, will be very approximately as follows:

1. Salaries (92 teachers, officers and assistants) -$165,000.00
2. Shop and Laboratory supplies, labor, etc. ------ 34,500.00
3. Shop and Laboratory Apparatus --------------- 18,500.00
4. Public Utilities (a) operation --------------- 45,000.00
   (b) Additional machinery --- 25,000.00
5. Equipment other than for teaching ------------ 12,500.00
6. Insurance, publications, office expense, etc.---- 22,000.00

-Collegiate costs -------------------------------- $322,500.00

7. 6% interest on loan of $112,842.11 -------------- 6,770.52
8. Repayment of one-tenth of loan --------------- 11,284.21

$340,554.73

9. Fertilizer Inspection and Analysis ------------ 40,270.00
10. Scholarships ------------------------------- 20,000.00

Total Estimated Costs -------------------------- $400,824.73
ESTIMATED RESERVES FOR FISCAL YEAR
1922-23

To meet the above costs the following funds are available:

1. Interest on Clemson Bequest ------------------------ $ 3,512.36
2. Interest on Land Script -------------------------- 5,754.00
3. Morrill & Nelson Funds (U. S.) ------------------- 25,000.00
4. Estimated Tuition ------------------------------- 13,000.00
5. Estimated Miscellaneous receipts ------------------ 30,000.00

$ 77,266.36

6. Estimated Fertilizer Tax -------------------------- 150,000.00

7. Estimated Balance carried forward July 1, 1922 60,112.73
   Total Resources ------------------------------- $287,379.09
9. Estimated Deficit ------------------------------- 113,445.64

$400,824.73

The above estimated deficit $113,445.64 will have to be provided in some way if the continuous normal operation of the college is to be guaranteed for another college year. It is not likely that the fertilizer tax will exceed the $150,000.00 estimated. It is more likely to go below than above.

The necessary provision can be made by the General Assembly in three ways:

(a) By a direct appropriation of $113,445.64.

(b) By a guarantee of the fertilizer tax up to a minimum of $263,445.64 which represents the estimated fertilizer tax of $150,000.00 plus the estimated deficit of $113,445.64.

(c) By a borrowing act similar to that of 1921 by which the college was authorized to borrow from the State Treasurer up to $150,000.00 if necessary.

Explanation of Items of Expenditure:
No. 1. Salaries—The gathering together of a college faculty is a labor of years. No amount of money can take the place of the time element involved. During the period of inflation the total increase in our salary account was only about 22
per cent. Since the war college salaries generally have not decreased—in fact, they are still on the up-grade. In technical colleges, such as Clemson, salaries are usually higher than in non-technical colleges because they have to compete with business corporations as well as other colleges. Even so, the average salary at Clemson, $1794.00, is probably lower than any other State College for men in South Carolina except the negro college at Orangeburg.

The figures below, compiled by the U. S. Bureau of Education in December, 1920, shows the averages of 52 colleges and universities compared with the averages at Clemson. At Clemson no rent-free houses or other perquisites are given. Each officer receives a cash salary and nothing more.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of 52 Colleges</td>
<td>$8324</td>
<td>$4427</td>
<td>$3372</td>
<td>Not given</td>
<td>$2241</td>
<td>$1659</td>
</tr>
<tr>
<td>Clemson College Averages</td>
<td>6000</td>
<td>3291</td>
<td>2786</td>
<td>$2307</td>
<td>2038</td>
<td>1530</td>
</tr>
</tbody>
</table>

The total for salaries at Clemson cannot be reduced without ruinous results.

**No. 2 Shop and Laboratory Supplies, etc**—A technical college, such as Clemson, consumes steel, iron, wood, etc. in its shops;—chemicals, glassware, etc. in its laboratories;—and labor for janitoring buildings, and in the upkeep of tools and machinery. For instance, steel, iron, coal, coke, etc. in our Foundry Division costs annually $2450.00. In the Wood Shop the cost of operation is $1,115.00 annually. The operating cost of the Dairy teaching is $3,065.00 and the Horticultural teaching $4,310.00,
teaching $4,310.00.

These costs, incurred only by a technical college, can neither be avoided nor reduced unless the cost of materials and labor further decline. The college must pay these costs unless we follow the fashion at many colleges and require the students to pay a shop and laboratory fee to cover them.
No. 3. *Shop and Laboratory Equipment*—Equipment for teaching includes electrical instruments, microscopes, balances, livestock, and a hundred other items to give technical instruction and keep that instruction up to date. To withhold these necessary facilities would be nothing short of a betrayal of trust to students whose money and precious time are being devoted to the pursuit of an education.

No. 4 *Public Utilities*—While ideally situated so far as city distractions go, Clemson suffers the necessity of having to maintain its own public utilities such as heat, light, and power plant, water works, sewer system, telephone system, 21 miles of dirt road, an extensive campus, a village of nearly 100 houses, and the usual features for law enforcement common to a small village. Our central light, power, and heating plant costs over $35,000.00 annually to operate;—the upkeep of residences $11,500.00. These costs are, of course, inescapable and cannot be reduced except as the cost of coal, labor, and materials come down. There seems to be no prospect of further decline during 1922. The addition for machinery is absolutely necessary to insure the continuous operation of the College.

No. 5 *Equipment Other Than for Teaching*—This item covers the renewal of fences and out-buildings, small additive stock, etc. It includes the many items not coming withinitions and changes here and there to buildings, additional the catalog of teaching that are necessary in so large a plant as this, and while the details differ from year to year, the total cannot be materially reduced.

No. 6 *Insurance, Office Expenses, Publications, Etc.*—Insurance, the travel and subsistence of the trustees during their three or four meetings each year, the expenses of the President's, Registrar's, and Treasurer's offices, the cost of the college catalog, and other college publications make up the total of this item. No saving can be accomplished here.
No. 7. Fertilizer Inspection and Analysis—To conduct efficiently the Fertilizer Inspection and Analysis is a fundamental obligation resting upon the college. The cost varies somewhat depending upon the cost of tags and hooks, the cost of travel, and the pay of inspectors. The figure given is the estimate for the fiscal year 1921-22.

No. 8. Scholarships—The cost of the scholarships, when all filled, is $22,300.00. Usually there are some scholarships vacant. We are putting the figure at $20,000.00 which will likely take care of all scholarships filled.

Buildings:

It will be noted that no buildings are included in the above estimate of cost. Altho a dormitory and about $300,000.00 worth of buildings are actually needed to complete the plant on its present basis of 900 students.

A MATTER OF HISTORY:

The Bargain:

In 1890 the friends of Clemson College in the legislature proposed that if the College were given the fertilizer tax, 25 cents per ton, the Trustees would organize and finance an efficient system of inspection and analysis, and with what balance remained would "create and maintain" an Agricultural College without direct appropriations by the state. This understanding was enacted into law.

History of the Fertilizer Tax:

During the 31 years of this agreement, 1890 to 1921, the fertilizer tax has aggregated $4,473,430.20 and average of $144,304.19—how much less than the public imagines! The variation of the tax is shown by the figures of the last ten years, which were as follows:
1911-12    $221,000.00
1912-13    231,500.00
1913-14    276,000.00
1914-15    155,859.00
1915-16    171,018.52
1916-17    216,432.49
1917-18    268,721.68
1918-19    258,477.10
1919-20    313,472.54
1920-21    167,505.16
1921-22    (probably) $150,000.00

During the 31 years the cost of analysis and inspection has amounted to $552,447.52 leaving for the erection and maintenance of the College $3,920,982.68. Our inventory shows a property value of over two million dollars, and out of the remainder the College has been kept steadily in operation for nearly a third of a century without appropriation from the state either for buildings or for maintenance.

Additional Duties:

But this is not the whole picture. From time to time the Legislature has seen fit to place upon the college certain lines of public service not contemplated in the original bargain, and the cost of which has come from that “balance” which was pledged to “erect and maintain” the college. These additional expenses were as follows:

1. In 1901 an act was passed providing for the work of the State Veterinarian and stipulating that the cost of this work should be paid from the current funds of Clemson College. The total cost of this work has been $109,983.25.

2. In 1904 the Scholarship Act was passed, and again it was specified that the cost of the scholarships should come from the funds of Clemson College. These scholarships have cost up to June 30th a total of $276,967.38.

3. In 1912 the work of the Crop Pest Commission was
established with the usual provision as to the payment. It has cost, $33,637.68.

4. In addition to the public service required by successive acts of the legislature, the Trustees, before the Lever Act was passed, realizing the need for extension service and for carrying on agricultural research work, in other sections of the state expended the following sums:

(a) For Extension Service $127,692.04
(b) For Branch Experiment Stations 122,738.98
(c) For Agricultural Research at the College 30,780.99
(d) For Miscellaneous Public Service 31,061.99

Total $312,274.87

The Trustees might have omitted to enter these lines of public service (a—b—c—and—d) since not required by law to do so, but they realized that there was a needed work to do for the agricultural people of the state which the Agricultural College must render. Sacrifice of buildings and equipment had to be made, but these sacrifices laid a foundation for the splendid structure of public service now financed, as it should be entirely by state and federal appropriations.

But when all is said and done, the total cost of items 1, 2, 3, and 4, which were over and above the original bargain to "erect and maintain" the college, is $732,863.18, an amount nearly sufficient to meet our building needs and to provide for our natural increase in students during the next three years.

College Growth:

As the average fertilizer tax increased the trustees developed the college in size and diversity, always leaving something for buildings which had to go along with the growth of the college in numbers and educational facilities. However, with the beginning of the war conditions changed. The fertilizer tax fluctuated greatly and costs greatly increased. Not only was there no margin left for buildings and equipment, but costs reached a figure requiring a maximum fertilizer tax to meet operating costs.
Loans:

In January, 1916 the Legislature authorized a loan of $62,400.00 to protect the college against a condition somewhat similar to the present. In 1919-20, with the largest fertilizer tax on record, this loan with interest was repaid in full.

Again this year, 1921, a loan of $112,842.11 was negotiated. It is on this loan that the college is at present able to continue its operation.

Legislative Responsibility:

With boll weevil conditions over nearly two-thirds of the state, the chance of the fertilizer tax again becoming an adequate support is exceedingly remote.

As an alternative to closing the college before the end of this session or failing to open its doors in the fall of 1922 the Legislature has a right, and theirs is the responsibility, to say whether or not they will again insure us in some way against a deficiency in the fertilizer tax. As faithful public servants, charged with the responsibility of administering one of the state's largest colleges, a college which represents vocationally 85 per cent of our people, the Board must agree that unless the legislature is given an opportunity to guarantee the continuous operation of the college in the present emergency, either by a guarantee, an appropriation, or another borrowing act, a responsibility and risk must be assumed that it would be impossible to justify.

The state and the college entered into the original bargain in good faith for the very purpose of giving to Clemson an adequate support independent of legislative appropriations. Neither the Legislature nor the Board could foresee the conditions that now confront the college. Since these conditions imperil the very purpose for which that bargain was made, it is high time, both in law and in morals, to make known all the facts to the Legislature. The Legislature will recognize, as we do, that it would be indeed a catastrophe to the state if the college were forced to suspend for a time, and our student body and faculty become scattered. Uninsured by legislative protection, such a calamity is possible, even probable, because present agricultural and financial conditions
may reduce the fertilizer tax to the lowest level in recent years—an amount upon which it would be impossible to keep the college goin.

The responsibility rests with the legislature. I am sure it will be sympathetically and wisely met by that honorable body, which whom the Trustees of Clemson College are but partners in a great public service.

Respectfully submitted,

W. M. RIGGS,

President, Clemson Agricultural College.

P.S. As required by law, I present herewith a list of students who pay tuition, those who do not, and those who hold scholarships.

Attached also are reports of the following officers:

1. The Board of Visitors.
2. The Treasurer.
3. The Auditor.
4. The Director of Experiment Station.
5. The Director of Extension Service.
6. The Secretary of the Fertilizer Board.
7. The Chief Chemist.
8. The State Entomologist and State Pathologist.
CLASSIFICATION OF STUDENTS AS REGARDS PAYMENT OF TUITION AND HOLDING OF SCHOLARSHIPS.

Abbeville County

Pay Tuition
Cason, S. M., Abbeville.
Coleman, J. F., Abbeville.
Hughes, W. T., Abbeville.
Johnson, J. M., Abbeville.
Moore, W. H., Abbeville.

Free Tuition
Cann, Geo., Abbeville.
Crowther, C. C., Antreville.
Cheatham, J. C., Abbeville.
Hill, A. M., Abbeville.
Wilson, J. W.

Beneficiary
Swetenburg, J. R., Abbeville.
Williams, S. A., Abbeville.

Anderson County

Pay Tuition
Clatworthy, W. M., Honea Path.
Day, E. S., Pendleton.
Dean, F. F., Anderson.
Gambrell, F. L., Pendleton.
Garrison, F. L., Pendleton.
Griffin, J. K., Belton.
Herron, R. P., Starr.
Jones, J. F., Starr.
Jones, R. W., Starr.
Lyon, J. J., Anderson.
McLees, F. C., Townville.
Moore, J. B., Anderson.
Pepper, J. O., Easley.
Pruitt, B. A., Anderson.
Pruitt, R. S., Anderson.
Pearman, S. N., Starr.
Robbins, J. M., Anderson.
Russell, B. A., Auten.

Beneficiary
Sloan, W. A., Anderson.
Stewart, W. M., Anderson.
Speer, G. M., Anderson.
Thompson, J. T., Anderson.
Wilhite, F. F., Anderson.

Free Tuition
Bigby, L. S., Williamson.
Burris, C. A., Anderson.
Burris, W. F., Anderson.
Bowden, A. B., Sandy Springs.
Campbell, R. C., Pendleton.
Cannon, C. B., Honea Path.
Crenshaw, J. C., Pelzer.
Duckworth, B. F. Jr., Anderson.
Dunlap, J. M., Honea Path.
Erskine, J. H., Anderson.
Gaines, J. G., Honea Path.
Garvin, P. M., Pendleton.
Griffin, C. W., Anderson.
Griffin, R. L. Jr., Anderson.
Hall, H. V., Pendleton.
Hammond, W. S., Anderson.
Murphy, T. J., Piedmont.
Smith, J. J., Starr.
Woodcock, O. B., Pelzer.
Watson, L. F., Anderson.

Aiken County

Pay Tuition
Eubanks, J. B. Jr., Aiken.
Howard, H. H., Graniteville.
Murckenfuss, C. H., Aiken.
Murry, R. N., Aiken.
Sawyer, G. W., Monetta.
Sally, N. R., Sally.

Free Tuition
Byrd, D. A., Graniteville.
Cook, L. H., Wagner.
Floyd, A. R., Warrensville.
McNair, M. R., Aiken.
Pearson, J. R., Jr., Graniteville.
Shealy, A. N., Perry.
Sally, J. D., Sally.
Taylor, C. L., Windsor.
Taylor, N. P., Windsor.

Allendale County

Pay Tuition
Stoney, P. D., Allendale.
Youmans, L. W., Fairfax.

Free Tuition
Farmer, Rudolph, Allendale.
Zeigler, H. S., Allendale.
CLASSIFICATION OF STUDENTS AS REGARDS PAYMENT OF TUITION AND HOLDING OF SCHOLARSHIPS—(Continued)

Webb, T. J., Anderson.
Wigington, J. T., Anderson.

**Bamberg County**

**Pay Tuition**

Coker, J. D., Ola.
Kirkland, J. M., Ehrhardt.

**Free Tuition**

Zeigler, F. M., Denmark.

**Barnwell County.**

**Pay Tuition**

Calhoun, C. F., Barnwell.
Hair, A. B., Blackville.
Hair, D. H., Blackville.
Lemon, A. N., Barnwell.
Molair, W. L., Barnwell.
Ray, W. S., Blackville.
Willis, M. A., Williston.

**Free Tuition**

Armstrong, J. B. Jr., Barnwell.
Dyches, L. B., Blackville.

**Beaufort County**

**Pay Tuition**

Keyserling, H. L., Silverstreet
Marscher, A. A., Beaufort.
Peeples, Philips, Bluffton.
Peeples, T. S., Bluffton.
Ramsey, E. D., Beaufort.
Ricker, E. C., Beaufort.
Ricker, G. F., Beaufort.

**Free Tuition**

Hiers, L. H., Beaufort.
Mann, M. E., Beaufort.

**Berkeley County**

**Pay Tuition**

Kirk, R. S., Eastover.
Villeponteau, Cordesville.

**Free Tuition**

Harvey, O. J., Summerville.

**Calhoun County**

**Pay Tuition**

Banks, R. W., St. Matthews.
Peastline, J. T., St. Matthews.
Stoudemire, L. C., Lone Starr.

**Free Tuition**

Cauthen, H. W., Fort Motte.
Rast, W. M., St. Matthews.
Summers, D. K., Cameron.

**Beneficiary**

McGowan, W. D., Cameron.

**Charleston County.**

**Pay Tuition**

Bell, S. S., James Island.
Cappleman, G. J. S., Charleston.
Davis, Ralph, Martins Point.
Ferguson, J. L., Charleston.
Geraty, J. W., Young Island.
Grice, G. D., Charleston.
Martin, J. V., Charleston.
McGillivra, H. S. Jr., Charleston.
Mikell, I. J., Edisto Island.
Mikell, S. H., Edisto Island.
Perry, F. T., Young Island.
Pinckney, J. S., Charleston.
Riley, A. J. Jr., Charleston.
Rittenburg, A. A., Charleston.
Rittenburg, M. R., Charleston.
Royall, J. E., Mt. Pleasant.
Seabrook, T. H., Charleston.
Simmons, T. R., Charleston.

**Free Tuition**

Bailey, E. M., Martins Point.
Davenport, O. F., Martins Point.
Denaro, J. M., Charleston.
Fraser, R. M., Mt. Pleasant.
Inman, J. K., Charleston.
Jenkins, E. M., Edisto Island.
Kirkley, C. L. Jr., McClellville.
Laurys, H. E., Charleston.
Leland, R. E., Monticello.
McCants, J. C., Mt. Pleasant.
Newton, W. H., Charleston.
O’Neil, B., Charleston.
Seabrook, O. F., Martins Point.
Steinmeyer, G. E., Charleston.
Stevenson, C. A. Jr., Charleston.
Venning, R. M., Mt. Pleasant.

**Beneficiary**

Townsend, J. C., Martins Point.
Whaley, E. C., Martins Point.

**Cherokee County**

**Pay Tuition**

Fortenberry, R. O., Gaffney.
CLASSIFICATION OF STUDENTS AS REGARDS PAYMENT OF TUITION AND HOLDING OF SCHOLARSHIPS—(Continued)

Inman. A. K., Wilkinsville.
Jeffries, T. L., Pacolet.
Sarratt, R. C., Gaffney.
Turner, T. P., Gaffney.

Free Tuition
Allison, J. M., Gaffney.
Brown, J. J., Gaffney.
Black, W. H., Gaffney.
Haas, C. I., Gaffney.
Smith, T. D., Blacksburg.
Beneficiary
Tollison, L. C., Gaffney.

Chester County
Pay Tuition
Abernathy, W. H., Fort Lawn.
Culp, C. L., Edgemore.
Cornwell, T. D., Chester.
Gaston, J. B., Rodman.
Gwin, M. H., Lewis Tounount.
Hall, E. H., Great Falls.
Ried, J. R. Jr., Richburg.
Reid, W. J. Jr., Richburg.
Shannon, J. R., Blackstock.
Wade, W. M., Lowryville.

Free Tuition
Bankhead, J. M., Lowryville.
Bennett, H. J., Chester.
Darby, J. E., Lowryville.
Gage, Gaston, Chester.
Kilgore, A. K., Richburg.
Meltion, G. H., Chester.
Robbins, Boyd., Chester.
Stevenson, H. F., Richburg.
Woods, W. M., Chester.

Beneficiary
Stevenson, R. A., Richburg.
Stevenson, T. C., Richburg.
Stevenson, D. W., Richburg.

Chesterfield County
Pay Tuition
McPherson, D. J. Jr., Cheraw.
Odom, W. H., Chesterfield.

Free Tuition
Knight, H. D., Angelus.
McArn, D. H., Cheraw.

Beneficiary
Hartzell, G. W., Cheraw.

Clarendon County
Pay Tuition
Bagwell, W. B., Manning.
Davis, W. D., Manning.
Hodge, J. E., Manning.
Oliver, M. B., Greeleyville.
Plowden, E. D., Jordan.
Ridgeway, K. E., Manning.
Rigby, J. H. Jr., Manning.

Beneficiary
Harvin, J. L., Pinewood.
Mahoney, W. M., Manning.

Colleton County
Pay Tuition
Boynton, C. W., White Hall.

Free Tuition
Durant, C. O., Cottageville.
McGowan, J. L., Ehrhardt.
Sounders, H. M., Marlboro.
Smyly, J. W. Jr., Buffin.

Beneficiary
Willis, H. A., White Hall.

Darlington County
Pay Tuition
Calhoun, C. F., Dovesville.
Conder, H. W., Darlington.
Sumner, J. P., Hartville.
Tillotson, W. E. Jr., Hartsville.

Free Tuition
Anderson, O. W., Darlington.
Auten, J. F., Hartsville.
Butler, C. M., Hartsville.
Banks, W. D., Hartsville.
Boone, S. C., Hartsville.
DeWitt, A., Darlington.
Dunlap, M. T., Hartsville.
DuRant, C. L., Mont Clare.
Perritt, L. G., Lamar.
Stuckey, C. C., McBee.
Woodham, B. G., Hartsville.
CLASSIFICATION OF STUDENTS AS REGARDS PAYMENT OF TUITION AND HOLDING OF SCHOLARSHIPS—(Continued)

Beneficiary
Ross, J. E., Society Hill.

**Dillon County**

Pay Tuition
Alford, E. R., Latta.
Atkins, M. T., Latta.
Bethea, T. H., Latta.
Cottingham, Vernon, Clio.
Elliott, J. F., Dillon.
Sherwood, R. Y., Dillon.

Free Tuition
Hamilton, S. S., Dillon.
LeGette, M. A., Latta.
Williams, A. B., Mallory.

**Dorchester County**

Pay Tuition
Ackerman, T. H., St. George.

Free Tuition
Allen, A. N., Summerville.

Beneficiary
Minus, P. M., St. George.

**Edgefield County**

Pay Tuition
Thurmond, J. S., Edgefield.
Timmerman, R. C., Edgefield.

Free Tuition
Mays, F. L., Edgefield.
Spearman, J. H. Edgefield.

**Fairfield County**

Pay Tuition
Jones, M. L., Longtown.
McMeekin, F. R., Monticello.
McMeekin, S. C., Jenkinsville.

Free Tuition
Cathcart, S. L., Winnsboro.
Dunlap, W. M., Winnsboro.
Harden, W. R., Winnsboro.
McMeekin, T. T., Monticello.

Beneficiary
Harvey, S. A., Woodward.

**Florence County**

Pay Tuition
Benton, L. L. Timmonsville.
Evans, M. A., Tampico.
Huggins, Marion, Timmonsville.
Hinson, H. L., Scranton.
Matthews, S. C. Scranton.

Free Tuition
Divine, H. W., Florence.
Garvin, J. F., Timmonsville.
Johnston, R. H., Florence.

Beneficiary
Hinson, I. L., Scranton.
Shands, R. G., Ebenezer.

**Georgetown County**

Pay Tuition
Jones D. B., Georgetown.
Rhems, C. F., Rhem.

Free Tuition
Bailey, R. W., Andrews.
Doar, L. H., Georgetown.
Rasor, J. R., Georgetown.

**Greenwood County**

Pay Tuition
Algray, W. F., Donalds.
Cothran, T. W., Greenwood.
Graham, R. M., Hodges.
Rasor, A. B., Donalds.
Rodgers, S. A., Callison.
Shirly, L. R., Greenwood.
Snead, C. B., Greenwood.
Turnipseed, B. R., Greenwood.

Free Tuition
Brissie, M. R., Hodges.
Cothran, E., Greenwood.
Cothran, F. H., Greenwood.
Durst, J. W., Greenwood.
Garret, W. F., Greenwood.
Miller, W. H., Greenwood.
Stribling, R. S., Ware Shoals.
Warner, J. D., Greenwood.

Beneficiary
Martin, F. G. Jr., Ninety Six.
CLASSIFICATION OF STUDENTS AS REGARDS PAYMENT OF TUITION AND HOLDING OF SCHOLARSHIPS—(Continued)

Roberts, W. J., Ninety Six.
Young, C. F., Jr., Greenwood.

Greenville County

Pay Tuition
Anderson, A. J., Greenville.
Armstrong, H., Fountain Inn.
Bryan, G. T., Jr., Greenville.
Ballenger, W. M., Jr., Greer.
Ballentine, W. L., Greenville.
Cunningham, J. L., Greer.
Davis, E. P., Jr., Greenville.
Ellis, W. J., Greenville.
Farrell, J. G., Greenville.
Fayssoux, F. S., Greenville.
Gilfillan, J. M., Greenville.
Goldsmith, W. M., Greenville.
Hendrix, W. B., Greenville.
LaBoone, F. P., Taylor.
Leach, M. R., Greenville.
Morgan, B. A., Greenville.
Norris, J. A., Piedmont.
Reese, M. R., Greer.
Smith, C. E., Greenville.
Smith, J. S., Greenville.
Stallworth, W. H., Gaines.

Free Tuition.
Baumann, J. H., Greenville.
Berry, J. B., Greenville.
Chandler, J. E., Pelzer.
Cooper, T. B., Greenville.
Dillard, R. L., Greer.
Duckett, L. L., Fountain Inn.
Gilmer, G. G., Greenville.
Givens, J. W., Fountain Inn.
Gowen, A. G., Jr., Greenville.
Howie, J. L., Greenville.
Hellams, J. L., Travelers Rest.
Hicks, M. L., Greenville.
Howell, A. N., Greer.
Lynn, M. H., Taylors.
Taylor, F. W., Fountain Inn.
Wade, J. L., Greenville.

Beneficiary
Miller, C. L., Greenville.
McCray, C. L., Greenville.

Horry County

Pay Tuition
Dermuth, E. M., Green Sea.
Fowler, F. J., Loris.
Williams, L. P., Bucksville.

Free Tuition.
Altman, H. S., Galivants Ferry.
Dorman, J. K., Conway.
Dusenbury, C. C., Toddville.

Beneficiary
Graham, J. P., Jr., Conway.

Hampton County

Pay Tuition
Causey, M. O., Furman.
Carter, R. E., Varnville.
Gooding, P. H., Hampton.
Mixon, A. B., Furman.
Peebles, M. L., Scotia.
Varn, O. F., Varnville.

Free Tuition
Bowers, H. A., Hampton.
Lawton, A. S., Garnett.
Lawton, R. E., Garnett.
Lightsey, L. M., Hampton.
Long, G. B., Garnett.
Mason, W. O., Estell.
Miley, L., Brunson.
Rentz, N. G., Varnville.
Riley, G. M., Jr., Garnett.
Thomas, F. E., Hampton.
Wiggins, E. C., Garnett.
Wiggins, J. E. Jr., Estell.

Jasper County

Free Tuition
Langford, W. F., Gillisonville.

Beneficiary
Fripp, W. P., Tillman.
Parnell, H. N., Gillisonville.

Kershaw County

Pay Tuition
Lenoir, T. W., Camden.
Trusdale, J. P., Kershaw.
CLASSIFICATION OF STUDENTS AS REGARDS PAYMENT OF TUITION AND HOLDING OF SCHOLARSHIPS—(Continued)

Free Tuition
Nettles, H. E., Lugoff.

Beneficiary
Richards, J. P., Liberty Hill.
Trotter, J. W., Camden.

Lancaster County
Pay Tuition
Bailes, J. P., Fort Mill.
Culp, T. F., Lancaster.
Cook, W. C. Kershaw.
Porter, H. A., Lancaster.
Williams, E. B., Kershaw.

Free Tuition
Timmons, E. D., Heath Springs.
Timmons, L. C., Heath Springs.

Beneficiary
Harris, O. P., Fort Mill.
King, J. M., Lancaster.
Patterson, C. E., Fort Mill.

Laurens County
Pay Tuition
Albright, G. C., Laurens.
Cannon, A. M., Mountville.
Chandler, E. S., Clinton.
Clapp, W. J., Clinton.
Copeland, E. W. Jr., Laurens.
Davis, W. G., Clinton.
Davis, T. W., Clinton.
Dunlap, J. H., Laurens.
Eastenby, A. H., Laurens.
Fuller, E. P., Laurens.
Hunter, H. A., Clinton.
Wood, H. H., Laurens.

Free Tuition
Armstrong, F. E., Laurens.
Crisp, C. A., Laurens.
Culbertson, J. A, Ware Shoals.
Epps, A. R., Lake City.
Griffin, W. F., Cross Hill.
Knight, A. J., Ware Shoals.
Knight, O. J., Ware Shoals.
Langston, J. L., Laurens.
Owens, J. C., Laurens.
Templeton, J. B., Clinton.
Wallace, N. L., Bryson.
Wallace, T. P., Bryson.
Woodside, H. F., Laurens.
Wofford, G. C., Laurens.

Lee County
Pay Tuition
Moore, W. E., Bishopville.
Williams, C. E., Pinehurst.

Free Tuition
Fields, J. N., Lamar.

Lexington County
Free Tuition
Addy, C. S., Leesville.
Pink, B. L., Batesburg.
Hartley, R. L., Batesburg.
Hiller, R. E., Chapin.

Beneficiary
Miller, J. C., Lexington.

Marion County
Pay Tuition
Mace, J. C., Marion.
Owens, J. B., Marion.
Solomon, L. Marion.

Free Tuition
Cartwright, A. K., Marion.
Driggers, B. F., Sellers.
Wood, H. W., Mullin.
Mace, S. N., Marion.
Owens, C. A., Marion.

Beneficiary
Mace, K. M., Marion.

Marlboro County
Pay Tuition
Crossland, J. E., Bennettsville.
David, C. C., Bennettsville.
Fletcher, E. G., McColl.
Fletcher, H. W., McColl.
McLaurin, E. B., McColl.
McLaurin, J. F., McColl.
Sherrill, L. H., Bennettsville.
Smith, A. L., Bennettsville.
Smith, D. R., Clio.
Smith, O. L., Bennettsville.
CLASSIFICATION OF STUDENTS AS REGARDS PAYMENT OF TUITION AND HOLDING OF SCHOLARSHIPS—(Continued)

Wright, L. C., Clio.  
Welch, W. F., Dillon.

Free Tuition  
Atkinson, C. N., Blenheim.  
Crosland, T. M., Bennettsville.  
Fletcher, L. A., Bennettsville.  
Odom, G. F., McColl.  
Smoot, B. F., McColl.

Beneficiary  
Howell, L. M., Bennettsville.

McCormick County  
Pay Tuition  
Bröwn., N. G., McCormick.  
Britt, W. E., McCormick.  
Dorn, J. B., McCormick.  
Talbert, J. B., McCormick.

Free Tuition  
Bussey, J. C., Parkville.  
Covin, J. O., Willington.  
Sheppard, J. L., McCormick.  
Beneficiary  
Roberts, J. M., Plum Branch.

Newberry County  
Pay Tuition  
Boozer, L. Prosperity.  
Coleman, D., Chappells.  
Coleman, J. V., Silverstreet.  
Epting, C. V., Peak.  
Fridy, R. M., Newberry.  
Huffman, W. C., Little Mountain.  
Hipp, R., Pomaria.  
Singley, H. S., Prosperity.  
Smith, W. B., Kinards.  
Wallace, F. H., Kinards.  
Wertz, R. B., Newberry.  
Wilbur, W. W., Newberry.

Free Tuition  
Aull, J. C., Pomaria.  
Bedenaugh, J. W., Prosperity.  
Boozer, W. M., Newberry.  
Epting, J. C., Little Mountain.  
Pugh, R. W., Prosperity.  
Pugh, W. C., Prosperity.  
Sease, E. C., Prosperity.  
Spearmen, W. W., Newberry.  
Wheeler, W. C., Little Mountain.

Beneficiary  
Hunter, J. H., Prosperity.  
Mills, O. B., Prosperity.

Oconee County  
Beneficiary  
Shiver, J. C., Clemson College.

I pay Tuition  
Alexander, J. H., Walhalla.  
Anderson, W. T., Seneca.  
Ansel, J. A., Walhalla.  
Davis, C. R., Fair Play.  
 Ellison, C. H., Seneca.  
Martin, R. S., Clemson College.  
Martin, S. M., Clemson College.  
McKean, J., Richland.  
McPhail, W. H., Townsville.  
Mills, W. H. Jr., Clemson College.  
Moss, J. H., Walhalla.  
Martin M., Seneca.  
Newman, A. S., Clemson College.  
Stribling, W. J., Walhalla.  
Verner, J. V., Richland.

Free Tuition  
Coarsey, R. W., Clemson College.  
Cobb, B. C., Walhalla.  
Dickson, W. P., Seneca.  
Dorn, W. L., Westminster.  
Harrison, G. A., Walhalla.  
Martin, L. I., Westminster.  
Merck, W. L., Calhoun.  
Mulkey, H. B., Westminster.  
Schroder, J. H., Walhalla.  
Shiver, N. C., Clemson College.  
St. John, N. P., Clemson College.  
Todd, J. N., Walhalla.  
Wilbanks, W. C., Clemson College.

Orangeburg County  
Pay Tuition  
Dukes, W. A., Branchville.  
Grambling, H. S., Orangeburg.  
Knotts, W. F., North.  
Livingston, A. R., North.  
Mackey, M. S., Orangeburg.  
Miley, J. N., Branchville.  
Robinson, E. E., Rowesville.  
Savage, E. B., Butawville.  
Simmons, K. B., Rowesville.
CLASSIFICATION OF STUDENTS AS REGARDS PAYMENT OF TUITION AND HOLDING OF SCHOLARSHIPS—(Continued)

Simmons, T. D., Rowesville.
Sally, H. B., Sally.
Smook, L. G., Cope.
Till, E. C., Orangeburg.
Till, N. R., Orangeburg.
Tindal, L. N., Vance.
Wilson, H. F., Bowman.
Weeks, J. L., Orangeburg.
Wertz, N. W., Orangeburg.
Robertson, L. H., Pickens.
Schilletter, J. C., Clemson College
Smith, C. R., Liberty.
Watkins, W. W., Easley.
Wertz, J. B., Clemson College.
Yongue, C., Pickens.
Sutherland, J. L., Pickens.

Free Tuition
Evans, T. M., Elloree.
Fogle, E. A., Orangeburg.
Gibson, J. W., Cowdova.
Gilmer, W. D., Holly Hill.
Hayden, O. L., Orangeburg.
Koopman, J. J., Batesville.
Smith, T. S., Springfield.
Thompson, E. A., Reavesville.
Till, J. F., Orangeburg.

Free Tuition
Traxler, D. W., Bowman.
Vincent, C. E., Orangeburg.
Wheestone, O. F., Rowesville.
Zeigler, T. J., Cope.

Beneficiary
Rickenbaker, T. D., Bowman.

Pickens County

Pay Tuition
Gaines, H. I., Central.
Hendricks, Easley.
Jones, B. K., Easley.
Kay, A. E., Easley.
McHugh, J. B., Clemson College.
Robertson, B. F., Jr. Clemson College.
Smith, T. W., Pickens.
Tate, R. W., Norris.
Walker, H. P., Easley.
Wyatt, W. F., Easley.
Williams, Ned Easley.

Free Tuition
Arnold, L. W., Central.
Ellison, M. C., Easley.
Freeman, J. F., Pickens.
Freeman, J. L., Pickens.
Mathews, D. T., Pickens.
Middleton, W. S., Clemson College.
Mathews, Vance, Clemson College.

Richland County

Pay Tuition
Chappell, L. C., Jr., Ykessville.
Coleman, E. B., Eastover.
Coleman, R. L., Hopkins.
Coles, A. B., Columbia.
Hollowell, J. G., Columbia.
Hollowell, J. R., Columbia.
Jones, H. J., Congaree.
Livingston, D. F., Columbia.
Price, G. D., Eastover.
Rawlinson, G. S., Eastover.
Sams, J. H. Jr., Columbia.

Free Tuition
Brown, B. S., Blythewood.
Burton, C. C., Inman.
Childs, L. H., Columbia.
Dominick, H. B., Columbia.
Eleazer, L. H., Chapin.
Guy, B. B., Columbia.
Killian, J. M., Columbia.
Lachicotte, L. H., Columbia.
Madden, L. E., Columbia.
Maxwell, R. E., Columbia.
Schumpert, F. E., Columbia.
Shelamer, A. M., Columbia.
Schoolbred, Augustus, Columbia.

Beneficiary
Hoffman, M. B., Blythewood.
Langford, G. S., Blythewood.
Rawl, E. H., Columbia.

Saluda County

Pay Tuition
Goff, W. E., Leesville.
Waters, P. B., Saluda.
Wise, P. N., Batesburg.

Free Tuition
Bodie, W. J., Batesburg.
Mathews, Kempson, J. M., Silverstreet.
CLASSIFICATION OF STUDENTS AS REGARDS PAYMENT OF TUITION AND HOLDING OF SCHOLARSHIPS—(Continued)

Merchant, V. E., Chappells.
Quattlebaum, C. A., Ridge Springs
Beneficiary
Zimmerman, D. W., Chappells.

Sumter County

Pay Tuition
Dwight, R. C., Wedgefield.
Emmanuel, E. H., Borden.
Ryan, F. R., Wedgefield.
Ryan, M. S., Wedgefield.
Sanders, C. W., Hacoed.
Wells, W. R., Sumter.

Free Tuition
Bass, F. J., Mayesville.
Bradley, N. M., Sumter.
Cain, O. W., Sumter.
Haynesworth, J. R., Jr. Sumter.
Mays, T. P., Mayesville.
Mellette, R. S., Sumter.
Mellette, W. W., Sumter.
McGrew, C. J., Sumter.
Parker, J. M., Dalzell.
Randle, M. B., Sumter.
Truluck, J. P., Motbridge.

Beneficiary
Ryan, J. H., Wedgefield.

Spartanburg County

Baiten, L. R., Tucupaw.
Dean, G. B., Spartanburg.
Dye, W. E., Spartanburg.
Fitzgerald, E. B., Spartanburg.
Foster, H. M., Roebuck.
Fuller, Roy Pacolet.
Gray, W. H., Woodruff.
Hagood, W. M., Spartanburg.
Heffner, L. B., Spartanburg.
Johnson, H. L., Spartanburg.
Kirkpatrick, J. W., Pacolet.
McClimon, W. L., Greer.
Moore, W. A., Cowpens.
Patterson, J. T., Woodruff.
Pearson, A. S., Woodruff.
Porter, L. W., Spartanburg.
Scruggs, J. L., Spartanburg.
Sams, M. W., Spartanburg.
Smith, A. P. Pauline.
Turbiff, W. G., Spartanburg.
Webber, C. E., Spartanburg.
Williams, R. N., Glenn Springs.

Free Tuition
Bishop, R. T., Woodruff.
Cannon, W. S., Spartanburg.
Carver, W. A., Spartanburg.
Ezell, B. D., Cherokee.
Freeman, E. J., Jr., Spartanburg
Freeman, R. A., Spartanburg.
Gentry, L. M., Landrum.
Halstead, R. T., Spartanburg.
Harris, J. E., Spartanburg.
Hendrix, T. G., Duncan.
Morgan, C. S., Welford.
Shands, E. H., Campobello.
Watkins, E. F., Spartanburg.
Wilkins, J. M., Cowpens.
Wilkins, Rowland, Cowpens.

Beneficiary
Hines, W. E., Spartanburg.
Morgan, T. W., Welford.
Thorne, T. F., Landrum.

Union County

Pay Tuition
Betsell, J. L., Union.
Haas, H. P., Union.
Hollingsworth, P. H., Union
Howell, R. E., Buffalo.
Jeffries, E. E., Union.
Littlejohn, B. C., Jonesville.
Sarter, C. C., Union.

Free Tuition
Chambers, J. A., Union.
Fowler, W. M., Jonesville.
Rice, S. C., Union.
Smith, W. R., Union.
Williams, E. W., Jonesville.

Beneficiary
Murphy, W. B., Union.
Thornton, M. H., Lockhart.

Williamsburg County

Pay Tuition
Boswell, C. W., Jr., Salters.
Davis, I. E., Salters Depot.
Gambel, J. P., Heinman.
O'Bryan, M. B., Heinman.
CLASSIFICATION OF STUDENTS AS REGARDS PAYMENT OF TUITION AND HOLDING OF SCHOLARSHIPS—(Continued)

Free Tuition
Steele, H., Kingstree.

Beneficiary
Burgess, J. K., Kingstree.
Scott, W. B., Kingstree.

York County
Pay Tuition
Brice, R. W., York.
Campbell, S. W., Tirzah.
Farris, T. M., Fort Mill.
Kinard, J. P., Jr., Rock Hill.
Logan, F. R., York.
Love, W. A., McConnellsville.
Plexico, J. C., Rock Hill.
Quinn, J. W., Jr. York.
Stewart, J. M., Rock Hill.
Wray, A. F., York.
Whisonant, W. W., York.

Free Tuition
Byars, W. B., Rock Hill.
Cook, J. M., Fort Mill.
Erwin, R. M., Fort Mill.
Erwin, W. J., Fort Mill.
Feemster, W. B., McConnellsville.
Foster, E. G., McConnellsville.
Fudge, B. R., Rock Hill.
Garrison, C. C., Fort Mill.
Gettys, E. F., York.
Nichols, J. L., Rock Hill.
Smarr, R. G., Sharon.
Walsh, J. N., York.
Young, L. R., Rock Hill.

Beneficiary
Glenn, W. J., York.
Grien, W. H., Fort Mill.
Hays, S. J., Rock Hill.
Horton, L. F., Sharon.
Plexico, J. C., York.
Roberson, H. E. Sharon.

Non Residents.
Calhoun, P., Atlanta, Ga.
Colbert, W. C., Ardmore, Okla.
Dunham, F. E., Stewart, Fla.
Graham, G. B., Charlotte, N. C.
Smyth, E. A., Hendersonville, N. C.
Hadlow, F. N., Jacksonville, Fla.
Springs, J. A., Hickory, N. C.
Hardlaw, F. N., Jacksonville, Fla.
Tate, H. F., Union Mills, N. C.
Hadlow, R. H., Jacksonville, Fla.
Taylor, F. E., Macon, Ga.
Henriquez, C. S., Jamaica, B. W. I.
Taylor, T., Savannah, Ga.
Jones, W. F., Selma, Ala.
Robbins, J. R., Marion, Ala.
Jones, W. R., Selma, Ala.
Sanford, R. L., Athens, Ga.
Lucas, T. T., Charlotte, N. C.
Sligh, W. D., Norfolk, Va.
Melson, H. R., Hogansville, Ga.
Thornton, B. G., Carrollton, Ga.
McDonald, W. S., Gainesville, Fla.
Parker, E. G., Grover, N. C.
Willis, Chas. E., LaGrange, Ga.
Redfern, W. M., Wadesboro, N. C.
Campbell, W. B., Villa Rica, Ga.
Williams, J. S., Washington, D. C.
Roberts, O. A., Walters, Okla.
Yeomans, L., Dawson, Ga.
Roberts, L. R., Rebecca, Ga.
Yeomans, M. S., Dawson, Ga.
Report of Board of Visitors

GENERAL COMMENT

1. The Board of Visitors appointed for the current year conforming to the laws of the State met at Clemson College on May 4th 1921. During the greater part of the two days, we made a careful inspection of the physical property and studied as the limited time would permit, all phases of the organization and life of the institution.

2. Our visit had been anticipated by the administrative officers with a carefully planned schedule of appointments which alone made it possible, within the limited time at our disposal, to gather facts and impressions as a basis for this report. We wish to record here our warmest thanks for the courtesies shown us by President Riggs, Departmental heads, Members of the Faculty and others. No detail had been omitted that would facilitate the work of the Board, or add to our comfort.

3. Our itinerary included a visit to all the Departments of the college. The head of each Department directed and assisted us in the inspection of his work, and in a most interesting way explained to us the contribution his department was endeavoring to make to the worth and efficiency of the institution. Without exception, these men demonstrated intelligent grasp of the demands of the institution upon them and evidenced loyalty and enthusiasm that was most gratifying to your Board of Visitors. We wish to make special mention of the impression that was made upon us by the co-ordination of effort between the departments, without which the College could never fulfill the hopes and expectations of its honored founders and the people of the Commonwealth whom it serves.

4. We shall not follow the precedent of reporting in any detail upon our inspection of all the various departments; suffice it to say that your Board gained the impression that the funds of the institution assigned to the various departments were not only economically, but well and wisely expended.

5. We do wish to mention our inspection and study of the boarding arrangements and business administration of the institution. All of the departments deserve favorable comment. We choose these two departments for the reason that in our judgment the efficiency of the institution in its work for the State, and
especially in its work for the young manhood of the State, rests
in a large way upon the manner in which these two departments
are administered.

6. In charge of a student committee and unaccompanied by
any of the officers of the institution, we visited many students in
their rooms and thoroughly inspected the cuisine. It was pleasing
to us and a splendid commendation of the management to have the
students say, seemingly without reservation, that every attention
was being given to their comfort and health, and that the food
throughout the session has been wholesome, well-prepared and
appetizing. The Board took a meal with the students in their
dining hall and passed unanimous judgment of pleasure and satis-
faction at the meal, which we were assured by the management and
students was representative of meals served from day to day.

7. Perhaps the Board gave more time to the business adminis-
tration of the College, including methods of distribution of funds,
systems of accounting, etc., than to any other department of the
institution. President Riggs, first by means of charts and schedules
gave us the foundation for a clear understanding of a carefully
evolved system of inter-departmental accounting. Later, we were
carried to the Book-keeping Department and shown the system by
inspection of the books of the current year. The Board of Visitors
wishes to congratulate the Board of Trustees upon the installation
of a system of accounting which is both comprehensive and
thoroughly modern, according to the best system of bookkeeping.
It is a safe-guard against waste of the funds of the institution as
a whole and a guarantee of economical and intelligent departmental
administration. No other phase of the work of the institution made
a happier impression on your Board of Visitors.

RECOMMENDATIONS

1. The financial experience of Clemson College this year leads
the Board of Visitors to feel that the most important matter before
us is a search for a plan that would stabilize the finances of the
institution.

Wise and far-seeing as the founders were they could not fore-
tell the effect upon the institution of a variable income. In making
available for Clemson College the receipts from the Fertilizer Tax,
they doubtless thought they were making ample provisions for the
institution for all time. They could not know the extent to which
the College has already expanded, nor could they foretell the de-
mands that would be made upon the institution from year to year.

It is the firm conviction of the Board of Visitors that Clemson
College cannot meet the needs of its constituency unless the Trus-
tees and the Executive officers of the institution are allowed to prepare from year to year a budget of expenses with reasonable assurance that the funds, that will be actually needed for any fiscal year, will be provided.

It is a dangerous public policy which allows it to become possible for one of the greatest institutions of the State to find its annual income suddenly decreased from forty to fifty per cent, by conditions over which it has no control as was the experience of Clemson College this year. Such policy is not only unfair to the Executive Officers of the Institution, but necessarily affects the efficiency of the Institution and retards its progress.

After carefully considering possible solutions, the Board of Visitors has decided that the most feasible and the least objectionable plan is to retain the Fertilizer Tax as it is at present, and then enter into a compact with the people of the State thru the Legislature, to the effect that if from year to year, the Legislature will provide sufficient funds to meet the needs of the College work of the institution, including inspection and analysis, then if, during any fiscal year, the receipts from the Fertilizer Tax should be in excess of an economical budget for the year, then such excess will be returned to the State Treasury or will be held subject to the disposition of the Legislature.

The Board of Visitors feel that such a compact should be willingly entered into by the people of the State and that the support of the College under the plan ought to be not merely sufficient, but liberal. Your Board is not prepared to name an amount that is necessary for the next fiscal year. The amount required from time to time will depend upon the growth of the institution. The amount will have to be ascertained from year to year. It should be an easy matter to meet the wishes of the Legislature as to when and how the budget should be prepared for the expenses of any fiscal year. There could be no objection to the Legislature in its own way placing a safe-guard around the Annual expenses of the institution. We earnestly hope that some plan will be devised that will enable President Riggs and the other administrative officers of the institution to know each year in advance just what funds will be available. No one thing could be done which would in our opinion, make a larger contribution to the efficiency of the institution.

2. While the Board of Trustees realize that there will always be objections,—some well-founded,—to the military system of student government; still our observation of the work of the institution leads us to believe that any change in this respect would be inadvisable. We were impressed with the orderly procedure of the cadets and the general expedition and efficiency with which the work of the College was carried along.
Supplementary Reports

3. The Governor of the State has suggested that buildings for public institutions should be financed by bond issues and not be a burden upon the current budget. Your Board of Visitors gives its hearty approval to this plan and hopes that every support will be given Gov. Cooper in presenting this plan to the Legislature. The needs of the institution in this respect have been brought to your attention from time to time.

CONCLUSION

1. In conclusion, the Board wishes to say that it found pleasure in the assigned work. We commend you for your liberal policies and wise administration; we commend unreservedly President Riggs for his energetic, untiring and able services as chief executive officer; we commend the College to its constituency as an outstanding influence towards realizing all that is noble and worthy in our highest hopes and ambitions for the Commonwealth of South Carolina.

Respectfully submitted,

John R. Hart, Chairman.
R. B. Cunningham
John W. McKay.
J. B. Parks.
B. E. Geer Secretary
Report of the Treasurer For the Fiscal Year
July 1, 1920, to June 30, 1921

To The Finance Committee of the Board of Trustees

(through the President):

Gentlemen:

As Secretary-Treasurer of the Clemson Agricultural College, I beg to submit the following report of all funds received and disbursed by me for the fiscal year ending June 30th, 1921.

Examination of this report will reveal that out of the total of $1,513,349.74 handled by this office, the college received $338,694.14, out of which the sum of $50,652.52 was used to defray the cost of scholarships, fertilizer inspection and analysis and other public service projects, leaving a balance of $288,041.62 for collegiate work.

Owing to a shrinkage of $145,967.38 in the fertilizer tax over that of the previous year, it was necessary to transfer the sum of $77,203.68 from the reserve fund to carry out the budget for the period covered by this report.

Respectfully submitted,

S. W. EVANS,
Secretary-Treasurer.

COLLEGE ACCOUNT

RECEIPTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Privilege Fertilizer Inspection Tax</td>
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<tr>
<td>Interest on Clemson Bequest</td>
<td>3,512.36</td>
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<tr>
<td>Interest on Landscrip</td>
<td>5,754.00</td>
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<tr>
<td>Morrill and Nelson Fund (U. S.)</td>
<td>25,000.00</td>
</tr>
<tr>
<td>Tuition from Cadets</td>
<td>13,486.40</td>
</tr>
<tr>
<td>Sales, Interest, Rents, etc.</td>
<td>46,232.54</td>
</tr>
<tr>
<td>From Reserve Fund</td>
<td>77,203.68</td>
</tr>
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</table>

$ 338,695.14
### EXPENDITURES

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scholarships and Advertisements</td>
<td>$12,749.10</td>
</tr>
<tr>
<td>Fertilizer Inspection and Analysis</td>
<td>$29,952.51</td>
</tr>
<tr>
<td>Miscellaneous Public Service</td>
<td>$2,483.36</td>
</tr>
<tr>
<td>South Carolina Agricultural Experiment Station</td>
<td>$5,467.55</td>
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<tr>
<td>Salaries, Labor, Coal, Materials, etc.</td>
<td>$253,910.34</td>
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<tr>
<td>Equipment for Teaching</td>
<td>$7,886.46</td>
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<tr>
<td>Improvements and Addition to Plant</td>
<td>$26,244.82</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$338,694.14</strong></td>
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</table>

### HATCH AND ADAMS FUND (U. S.)

**S. C. Agricultural Experiment Station.**

### RECEIPTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance on hand July 1st, 1920</td>
<td>$2,219.43</td>
</tr>
<tr>
<td>Adams Fund</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>Hatch Fund</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>Sales</td>
<td>$2,481.28</td>
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<tr>
<td>Over-draft June 30th, 1921</td>
<td>$421.85</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$35,122.56</strong></td>
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</table>

### EXPENDITURES

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>$18,964.08</td>
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<tr>
<td>Labor</td>
<td>$6,051.11</td>
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<tr>
<td>Publications</td>
<td>$470.62</td>
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<tr>
<td>Postage and Stationery</td>
<td>$1,045.63</td>
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<tr>
<td>Freight and Express</td>
<td>$496.83</td>
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<tr>
<td>Heat, Light, Water and Power</td>
<td>$279.31</td>
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<tr>
<td>Chemicals and Laboratory Supplies</td>
<td>$824.47</td>
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<tr>
<td>Seed, Plants and Sundry Supplies</td>
<td>$1,434.64</td>
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<tr>
<td>Fertilizers</td>
<td>$455.15</td>
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<tr>
<td>Feed Stuff</td>
<td>$1,887.49</td>
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<tr>
<td>Library</td>
<td>$654.87</td>
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<tr>
<td>Tools, Machinery, etc.</td>
<td>$894.22</td>
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<tr>
<td>Furniture and Fixtures</td>
<td>$461.55</td>
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<tr>
<td>Scientific Apparatus and Specimens</td>
<td>$480.89</td>
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<tr>
<td>Live Stock</td>
<td>$100.00</td>
</tr>
<tr>
<td>Traveling Expenses</td>
<td>$255.04</td>
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<tr>
<td>Buildings and Land</td>
<td>$366.66</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$35,122.56</strong></td>
</tr>
</tbody>
</table>
SMITH-LEVER FUND (U. S.)
Extension Service.

RECEIPTS

Federal Appropriation .................................................. $130,297.88
State Appropriation ..................................................... 81,070.00
---
$211,367.88

EXPENDITURES

Salaries ................................................................. $148,867.68
Labor ................................................................. 9.00
Publications ......................................................... 4,581.54
Postage, Telegraph, Freight, etc. ............................... 2,792.95
Stationery and Small Printing ................................... 1,119.22
Heat, Light and Water ............................................... 606.80
Supplies ............................................................. 920.37
Library ................................................................ 92.06
Tools, Machinery, etc. ............................................. 63.77
Furniture and Fixtures ............................................. 3,437.72
Scientific Apparatus ............................................... 180.53
Traveling Expenses .................................................. 48,279.62
Contingent and Incidental Expenses ......................... 416.62
---
$211,367.88

STATE APPROPRIATIONS.

APPROPRIATIONS

Agricultural Research ............................................... $35,683.96
Live Stock Sanitary Work ......................................... 38,435.31
Tick Eradication .................................................... 19,973.19
Crop Pest and Disease Work ..................................... 11,318.34
---
$105,410.80

EXPENDITURES

Agricultural Research ............................................... $35,683.96
Live Stock Sanitary Work ......................................... 38,435.31
Tick Eradication .................................................... 19,973.19
Crop Pest and Disease Work ..................................... 11,318.34
---
$105,410.80

Note: The above for fiscal year July 1, '20 to June 30, '21.

REINVESTMENT FUNDS.

RECEIPTS

Balance on hand July 1, 1920 ................................... $132,338.14
Receipts for fiscal year .......................................... 352,876.13
---
$485,214.27
**EXPENDITURES**

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
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<tbody>
<tr>
<td>Animal Husbandry</td>
<td>$12,733.98</td>
</tr>
<tr>
<td>Creamery</td>
<td>26,814.27</td>
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<tr>
<td>Dairy</td>
<td>15,082.64</td>
</tr>
<tr>
<td>Farm</td>
<td>20,667.91</td>
</tr>
<tr>
<td>Poultry</td>
<td>151.99</td>
</tr>
<tr>
<td>Veterinary Hospital</td>
<td>2,728.15</td>
</tr>
<tr>
<td>Coast Experiment Station</td>
<td>1,200.08</td>
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<tr>
<td>Pee Dee Experiment Station</td>
<td>10,159.27</td>
</tr>
<tr>
<td>Building Sinking Fund</td>
<td>10,519.62</td>
</tr>
<tr>
<td>Coal Sales</td>
<td>2,995.66</td>
</tr>
<tr>
<td>Barracks Fire Loss</td>
<td>11,975.08</td>
</tr>
<tr>
<td>Student Fees</td>
<td>5,421.47</td>
</tr>
<tr>
<td>Cadet Exchange</td>
<td>15,165.04</td>
</tr>
<tr>
<td>College Departments</td>
<td>1,959.80</td>
</tr>
<tr>
<td>Education of Disabled Soldiers</td>
<td>9,994.81</td>
</tr>
<tr>
<td>Heat, Light and Water</td>
<td>837.62</td>
</tr>
<tr>
<td>Hotel</td>
<td>18,743.51</td>
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<tr>
<td>Hog Cholera Serum Work</td>
<td>37,920.87</td>
</tr>
<tr>
<td>Insurance</td>
<td>164.98</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>30,847.42</td>
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<tr>
<td>Nursery Inspection Tags</td>
<td>135.15</td>
</tr>
<tr>
<td>Rents</td>
<td>11,918.63</td>
</tr>
<tr>
<td>Reserve Fund (Transferred to College Acct.)</td>
<td>77,203.68</td>
</tr>
<tr>
<td>Receiving Account</td>
<td>25,993.90</td>
</tr>
<tr>
<td>Smith-Hughes Fund</td>
<td>17,683.76</td>
</tr>
<tr>
<td>Smith-Lever Interest Account</td>
<td>1,558.30</td>
</tr>
<tr>
<td>Student Loans and Medals</td>
<td>552.90</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 371,130.49</strong></td>
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</tbody>
</table>

Balance on hand June 30th, 1921 | $114,083.78

**CADET FUND.**

**RECEIPTS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance on hand July 1, 1920</td>
<td>$ 3,358.00</td>
</tr>
<tr>
<td>Subsistence</td>
<td>154,847.53</td>
</tr>
<tr>
<td>Room, Heat, Light and Water</td>
<td>13,639.14</td>
</tr>
<tr>
<td>Hospital</td>
<td>9,505.17</td>
</tr>
<tr>
<td>Hospital</td>
<td>5,902.10</td>
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<tr>
<td>Incidentsals</td>
<td>5,902.10</td>
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<tr>
<td>Uniforms</td>
<td>36,351.70</td>
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<tr>
<td>Student Activity Fee</td>
<td>8,478.58</td>
</tr>
<tr>
<td>Diploma Fees</td>
<td>624.75</td>
</tr>
<tr>
<td>Breakage</td>
<td>2,284.36</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>4.65</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 249,805.65</strong></td>
</tr>
</tbody>
</table>
**Expenditures**

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsistence</td>
<td>$148,550.83</td>
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<tr>
<td>Room, Heat, Light and Water</td>
<td>$13,532.33</td>
</tr>
<tr>
<td>Laundry</td>
<td>$14,809.67</td>
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<tr>
<td>Hospital</td>
<td>$9,499.74</td>
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<tr>
<td>Incidents</td>
<td>$5,190.76</td>
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<tr>
<td>Uniforms</td>
<td>$36,734.20</td>
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<tr>
<td>Student Activity Fee</td>
<td>$8,554.96</td>
</tr>
<tr>
<td>Diploma Fees</td>
<td>$641.33</td>
</tr>
<tr>
<td>Breakage</td>
<td>$2,284.36</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$2,158.98</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$241,957.16</strong></td>
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</tbody>
</table>

**Balance on hand June 30th, 1921** $7,848.49

**Total** $249,805.65

**Student Deposits.**

**Receipts**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance on hand July 1st, 1920</td>
<td>$84.29</td>
</tr>
<tr>
<td>Deposits</td>
<td>$88,072.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$88,156.29</strong></td>
</tr>
</tbody>
</table>

**Expenditures**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checks paid</td>
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</tr>
<tr>
<td>Balance on hand June 30, 1921</td>
<td>$392.10</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$88,156.29</strong></td>
</tr>
</tbody>
</table>

**Summary**

**Receipts**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash on hand July 1, 1920:</td>
<td></td>
</tr>
<tr>
<td>South Carolina Experiment Station</td>
<td>$2,219.43</td>
</tr>
<tr>
<td>Reinvestment Accounts</td>
<td>$132,338.14</td>
</tr>
<tr>
<td>Cadet Fund</td>
<td>$3,358.00</td>
</tr>
<tr>
<td>Cadet Deposits</td>
<td>$84.29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$137,999.86</td>
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</tbody>
</table>
Receipts for fiscal year:

<table>
<thead>
<tr>
<th>Account</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Account (Including $77,203.68 from Reserve Fund)</td>
<td>$338,694.14</td>
</tr>
<tr>
<td>Hatch and Adams Fund (U. S.)</td>
<td>32,481.28</td>
</tr>
<tr>
<td>Smith-Lever Fund</td>
<td>211,367.88</td>
</tr>
<tr>
<td>State Appropriations</td>
<td>105,410.80</td>
</tr>
<tr>
<td>Reinvestment Accounts</td>
<td>352,876.13</td>
</tr>
<tr>
<td>Cadet Fund</td>
<td>246,447.65</td>
</tr>
<tr>
<td>Cadet Deposits</td>
<td>88,072.00</td>
</tr>
</tbody>
</table>

$1,513,349.74

EXPENDITURES

<table>
<thead>
<tr>
<th>Account</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Account</td>
<td>$338,694.14</td>
</tr>
<tr>
<td>Hatch and Adams Fund (U. S.)</td>
<td>35,122.56</td>
</tr>
<tr>
<td>Smith-Lever Fund</td>
<td>211,367.88</td>
</tr>
<tr>
<td>State Appropriations</td>
<td>105,410.80</td>
</tr>
<tr>
<td>Reinvestment Accounts</td>
<td>371,130.49</td>
</tr>
<tr>
<td>Cadet Fund</td>
<td>241,957.16</td>
</tr>
<tr>
<td>Cadet Deposits paid</td>
<td>87,764.19</td>
</tr>
</tbody>
</table>

$1,391,447.22

Cash on hand June 30th, 1921          121,902.52

$1,513,349.74
Report of State Bank Examiner

From July 1, 1920 to June 30, 1921 Inclusive.

GENERAL REPORT

The accounts of Clemson Agricultural College were carefully examined and audited by the State Bank Examiner's Department, for the period closing June 30th, 1921.

During the period audited, expenditures for the College proper amounted to $288,041.62, including improvements, additions to plant and equipment for teaching. Public Service (Extension work) shows an expenditure of $50,652.52, and Research (Hatch and Adams Funds), $35,122.56.

The college treasurer handled during the year $249,805.65 cadet funds and $88,156.29 students deposits. These two funds are administered for the sole use and benefit of the students.

An account to which attention is directed is the general head of "Re-investment," is of special interest, inasmuch as the general balance in this account goes to swell the general expenditures of the College in the face of the statement, while not actually doing so. For convenience the College carries a number of side accounts under the general head of "Reinvestments" Accounts which represent merely turn-overs with no new income to the College resulting therefrom. Our exhibit "Reinvestment Account" merely shows the standing of these accounts. Total receipts from Reinvestment for period audited amount to $352,876.13 while total expenditures amount to $371,130.49. There is still a turn-over balance in this account of $114,083.78, due to balance brought forward July 1, 1920.

The College has carried an account in reserve, termed the "Reserve Fund", which has been used heretofore to tide over the period from July 1st. to December 31, during which time there are practically no receipts from the fertilizer tax. Owing to the falling off of the tag tax during the last fiscal year the College has been forced to transfer from "Reserve" to the College account $77,203.68, which virtually eliminates this fund as a tide-over fund, as stated. It may be stated in a general way that collections from the tag tax for the period of this audit have fallen far short of what is necessary to conduct the college activities, and hence the management will be forced to borrow, under authority of the legislature, in order that the work there may be held up to its usual standard of efficiency. The college authorities appear to have ex-
ercised rigid economy in dispensing its funds and to have made the best possible use of its limited means. While this is to be commended, under the circumstances, it should call for the thoughtful attention of the State Legislators. Owing to the boll weevil disaster, which will probably continue with us, work of the college and especially its public activities cannot be adequately supported in the future as in the past from the tag tax alone.

The clerical condition of the Treasurer's office is excellent, the books free from errors in final balances.

The funds of the college are appropriated by the Trustees on the "Budget System" in which careful consideration is given to every item asked for.

In closing I desire to thank the college Treasurer, S. W. Evans, and his help for their readiness in every way to aid in a thorough audit of the institution.

JAS. H. CRAIG,
State Bank Examiner.

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GENERAL ACCOUNT.

RESOURCES

Privilege Fertilizer tax .................. $167,505.16
Interest on Clemson Bequest ............... 3,512.36
Interest on Land Script .................. 5,754.00
Morrill and Nelson Funds (U.S.) ............ 25,000.00
Tuition from Cadets .................. 13,486.40
Sales, interest, rents, etc. ................. 46,232.54
Transferred from Reserve Fund ............ 77,203.68—$ 338,694.14

EXPENDITURES.

Public Service—

Scholorships and advertisements .......... 12,749.10
Fertilizer analysis and inspection .......... 29,952.51
Miscellaneous public services, ............. 2,483.36
S. C. Agricultural Expt. Stations .......... 5,467.55

Total Public Services .................. 50,652.52

College Operating Expenses—

Salaries, labor, coal, materials, etc ... 253,910.34
Equipment for teaching .................. 7,888.46
Improvements and additions to plant .......... 26,244.82

Total College Operating Expenses ........... $338,694.14
### EXPENDITURES CLASSIFIED

#### Public State Work—
- Scholarships and advertising ........................................ 12,749.10
- Fertilizer analysis .................................................. 12,179.11
- Fertilizer inspection ................................................ 17,773.40
- Miscellaneous ......................................................... 2,483.36
- S. C. Experiment station ........................................... 5,467.55 —$ 50,652.52

#### Academic Department—
- English division ..................................................... 23.40
- History division .................................................... 22.30
- Mathematics division ............................................. 8.10
- Office and unclassified ........................................... 495.14
- Physics division ................................................... 381.75 — 930.69

Salaries ........................................................................... 36,121.27

#### Agricultural Department—
- Agricultural Education Division ................................. 1,769.96
- Agronomy Division ..................................................... 907.68
- Animal Husbandry .................................................... 10,459.17
- Botany and Bacteria .................................................. 1,552.24
- Dairy Division ........................................................ 5,085.20
- Entomology and Zoology ............................................. 447.56
- Geology and Mineralogy ............................................. 24.52
- Horticulture ............................................................ 2,530.91
- Office and unclassified ............................................. 1,436.90
- Poultry Husbandry .................................................... 698.17
- Veterinary Science division ....................................... 681.24 — 25,563.55

Salaries ........................................................................... 37,343.50

#### Chemical Department—
- Chemistry division .................................................... 2,492.80

Salaries ........................................................................... 8,649.90

#### Engineering Department—
- Civil Engineering Division ......................................... 128.10
- Drawing Division ....................................................... 1,787.17
- Electrical Engineering .............................................. 925.47
- Forge and Foundry ..................................................... 1,948.13
- Machine shop ............................................................ 1,344.00
- Mechanical Engineering ............................................ 398.57
- Office and unclassified ............................................. 706.54
- Woodshop .................................................................... 2,513.88 — 9,751.86

Salaries ........................................................................... 32,424.13

#### Military Department—
- Office and unclassified ............................................. 1,767.76

Salaries ........................................................................... 6,635.79
**Textile Department**
- Carding and Spinning ........................................... 790.44
- Dyeing Division ................................................. 360.28
- Office and unclassified ........................................ 1,302.53
- Weaving Division ............................................... 518.31
  **Total** .................................................................. 2,971.56

**Salaries** .................................................................. 9,159.18

**Public Utility Department**
- Campus Division ....................................................... 3,945.38
- Construction and repairs ......................................... 21,366.16
- Farm Division .......................................................... 3,235.81
- Heat, light and water .............................................. 30,351.76
- Roads, sidewalks, hauling ........................................ 6,252.34
- Watchman ................................................................ 919.17
  **Total** .................................................................. 66,070.62

**Miscellaneous Department**
- Hospital Division ..................................................... 2,029.19
- Hotel ...................................................................... 299.35
- Library .................................................................... 3,754.45
- Miscellaneous .......................................................... 16,164.11
- President's Office .................................................... 2,380.26
  **Total** .................................................................. 24,627.36

**Miscellaneous Department (Continued)**
- Salaries .................................................................. 15,870.24
- Telephone Service ................................................... 1,170.70
- Treasurer's Office ...................................................(Continued) .................................................. 6,490.71
  **Total** .................................................................. $338,694.14

**ADAMS AND HATCH FUNDS.**

**RESOURCES**
- Balance Farm products, July 1, 1920 .......................... 2,219.43
- Received Adams Fund .............................................. 15,000.00
- Received Hatch Fund ............................................... 15,000.00
- Received Farm products .......................................... 2,481.28
- June 30, 1921 over-paid ......................................... 421.85
  **Total** .................................................................. 35,122.56

**EXPENDITURES**
- Salaries ................................................................. 18,964.08
- Labor ...................................................................... 6,051.11
- Publications ............................................................ 470.62
- Postage and Stationery ............................................. 1,045.63
- Freight and expenses ............................................... 496.83
- Heat, light, water and power .................................... 279.31
- Chemicals and laboratory ........................................ 824.47
- Seeds, plants and supplies ....................................... 1,434.64
Supplementary Reports

Fertilizer ........................................ 455.15
Feed Stuff ........................................ 1,887.49
Library ........................................... 654.87
Tools, machinery and appliances ............... 894.22
Furniture and fixtures ......................... 461.55
Scientific apparatus and specimens .......... 480.89
Live stock ....................................... 100.00
Traveling expenses .............................. 255.04
Buildings and land .............................. 366.66

Total ................................................ 35,122.56

EXTENSION WORK.

Federal Appropriations ......................... 130,297.88
State Appropriations ............................ 87,070.00
Appropriations by Counties ..................... 39,227.88

Total ................................................ 250,595.76

Disbursements.

Salaries .......................................... 188,095.56
Labor ................................................ 9.00
Publications ...................................... 4,581.54
Postage, Tel., Freight, etc. ................... 2,792.95
Stationery and small printing .................. 1,119.22
Heat, light, and water ......................... 606.80
Miscellaneous supplies ......................... 920.37
Library ........................................... 92.06
Tools, machinery, etc. .......................... 63.77
Furniture and fixtures ......................... 3,437.72
Scientific apparatus ............................ 180.53
Traveling expenses .............................. 48,279.62
Contingent expenses ............................ 416.62

Total ................................................ 250,595.76

Included in above are $39,227.88 not included in Treasurer's Cash account but paid directly by counties and carried here in side account.

CADET FUND

<table>
<thead>
<tr>
<th>Item</th>
<th>Receipts</th>
<th>Disbursements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance, July 1, 1920</td>
<td>$3,358.00</td>
<td>148,550.83</td>
</tr>
<tr>
<td>Subsistence</td>
<td>154,847.53</td>
<td>13,532.33</td>
</tr>
<tr>
<td>Heat, light and water</td>
<td>13,639.14</td>
<td>14,809.67</td>
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<tr>
<td>Laundry</td>
<td>14,809.67</td>
<td>9,499.74</td>
</tr>
<tr>
<td>Hospital</td>
<td>9,505.17</td>
<td>5,190.76</td>
</tr>
<tr>
<td>Incidentals</td>
<td>5,902.10</td>
<td>36,734.20</td>
</tr>
<tr>
<td>Uniforms</td>
<td>36,351.70</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Amount</td>
<td>Amount</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Student activity fees</td>
<td>8,478.58</td>
<td>8,554.96</td>
</tr>
<tr>
<td>Diploma Fees</td>
<td>624.75</td>
<td>641.33</td>
</tr>
<tr>
<td>Breakage</td>
<td>2,284.36</td>
<td>2,284.36</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>4.65</td>
<td>2,158.98</td>
</tr>
<tr>
<td>Balance, June 30th, 1921</td>
<td></td>
<td>7,848.49</td>
</tr>
</tbody>
</table>

**Totals**

|                                                                 | $249,805.65 | $249,805.65 |

**STUDENTS DEPOSIT ACCOUNT**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance as per ledger July 1, 1920</td>
<td>84.29</td>
<td></td>
</tr>
<tr>
<td>Deposits</td>
<td>88,072.00</td>
<td>88,156.29</td>
</tr>
</tbody>
</table>

**Disbursements**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checks paid</td>
<td>87,764.19</td>
<td></td>
</tr>
<tr>
<td>Balance, July 1, 1921</td>
<td>392.10</td>
<td>88,156.29</td>
</tr>
</tbody>
</table>

**REINVESTMENT ACCOUNT**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Service</td>
<td></td>
</tr>
<tr>
<td>Salaries</td>
<td>26,146.78</td>
</tr>
<tr>
<td>Wages</td>
<td>45,703.13</td>
</tr>
<tr>
<td>Architects fee</td>
<td>125.88</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suppliers</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, butter fat, etc.</td>
<td>42,962.21</td>
</tr>
<tr>
<td>Fuel, coal, etc.</td>
<td>5,745.29</td>
</tr>
<tr>
<td>Feed, veterinary services, etc.</td>
<td>48,553.57</td>
</tr>
<tr>
<td>Fertilizer and seed</td>
<td>6,692.77</td>
</tr>
<tr>
<td>Refunds to Summer school students</td>
<td>474.90</td>
</tr>
<tr>
<td>General Supplies</td>
<td>29,629.18</td>
</tr>
<tr>
<td>Telegrams, etc.</td>
<td>14.90</td>
</tr>
<tr>
<td>Printing Bulletins</td>
<td>559.12</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Transportation</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traveling of Smith-Hughes force, etc.</td>
<td>4,800.35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fixed charges and contributions</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance</td>
<td>198.03</td>
</tr>
<tr>
<td>Aid for education (loans to students)</td>
<td>500.00</td>
</tr>
<tr>
<td>Students medals, (Norris medal)</td>
<td>52.90</td>
</tr>
<tr>
<td>Interest paid on overdrafts</td>
<td>1,416.22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live stock</td>
<td>1,063.33</td>
</tr>
<tr>
<td>Autos for veterinarians (3)</td>
<td>2,466.00</td>
</tr>
<tr>
<td>General equipment for farm,</td>
<td>4,828.80</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building materials, etc.,</td>
<td>18,415.37</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unclassified</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer to College account,</td>
<td>128,036.22</td>
</tr>
<tr>
<td>Transfer to Summer School acct.</td>
<td>2,745.54</td>
</tr>
</tbody>
</table>
Summaries.
Expenditures for fiscal year, 371,130.49
Overdrafts from previous year, 42,883.62
Total, 414,014.11
Receipts for fiscal year, 352,876.13
Balance from previous year, 175,221.76
Total, 528,097.89
Aggregate Balances, 528,097.89
Aggregate Overdrafts, 414,014.11
Net balances, $114,083.78

CONDENSED STATEMENT.

Sources of College Revenue and Expenses for fiscal year July 1, 1920 to June 30, 1921, inclusive:

INCOME

General—
Privilege Fertilizer tax $167,505.16
Interest on Clemson Bequest 3,512.36
Interest on Land Script 5,754.00
Morrill & Nelson Funds (U. S.) 25,000.00
Tuition, 13,486.40
Sales, interest, rents etc. 46,232.54
Transfer from reserve 77,203.68 $ 338,694.14

Adams and Hatch Funds—
Balance Farm Products 2,219.43
Received Adams Fund 15,000.00
Received Hatch Fund 15,000.00
Received Farm 2,481.28 34,700.71

Extension work—
Federal Appropriations 130,297.88
State Appropriations 81,070.00
Counties (Memorandum) 39,227.88 250,595.76

Cadet Fund—
Balance July 1, 1920 3,358.00
Receipts sundry 246,447.65 249,805.65

Re-Investment Fund—
Balance net, July 1, 1920 132,338.14
Receipts 352,876.13 485,214.27

Students deposit account—
Balance July 1, 1920 84.29
Deposits 88,072.00 88,156.29

Total Receipts and Balances $1,447,166.82
Less county appropriations paid direct by County officials 39,227.88

$1,407,938.94
**Supplementary Reports**

**CONDENSED STATEMENT.**

**Disbursements.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>College</td>
<td>338,694.14</td>
</tr>
<tr>
<td>Adams and Hatch funds</td>
<td>35,122.56</td>
</tr>
<tr>
<td>Extension Work</td>
<td>250,595.76</td>
</tr>
<tr>
<td>Contingent Fund</td>
<td>241,957.16</td>
</tr>
<tr>
<td>Students checks paid</td>
<td>87,764.19</td>
</tr>
<tr>
<td>Reinvestment accounts</td>
<td>371,130.49</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,325,264.30</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less paid by Co. (Smith-Lever)</td>
<td>39,227.88</td>
</tr>
<tr>
<td><strong>Total balances July 1, 1921:</strong></td>
<td><strong>$1,286,036.42</strong></td>
</tr>
<tr>
<td>Cadet Fund</td>
<td>7,848.49</td>
</tr>
<tr>
<td>Re-investment Fund</td>
<td>114,083.78</td>
</tr>
<tr>
<td>Cadet deposits</td>
<td>392.10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$122,324.37</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less O. D. farm products</td>
<td>421.85</td>
</tr>
<tr>
<td><strong>Total receipts:</strong></td>
<td><strong>$121,902.52</strong></td>
</tr>
<tr>
<td><strong>Total disbursements:</strong></td>
<td><strong>$120,036.42</strong></td>
</tr>
</tbody>
</table>

**Cash on Hand, June 30, 1921.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers and Merchants Bank</td>
<td>17,500.00</td>
</tr>
<tr>
<td>National Bank of Sumter</td>
<td>7,000.00</td>
</tr>
<tr>
<td>National Bank of Newberry</td>
<td>10,000.00</td>
</tr>
<tr>
<td>Palmetto National Bank, Columbia,</td>
<td>10,000.00</td>
</tr>
<tr>
<td>Farmers Bank, Abbeville</td>
<td>3,000.00</td>
</tr>
<tr>
<td>Peoples Savings Bank</td>
<td>2,000.00</td>
</tr>
<tr>
<td>National Bank, of Abbeville</td>
<td>2,000.00</td>
</tr>
<tr>
<td>Union Savings Bank</td>
<td>12,500.00</td>
</tr>
<tr>
<td>Bank of Greenwood</td>
<td>3,000.00</td>
</tr>
<tr>
<td>Fort Hill Bank</td>
<td>2,000.00</td>
</tr>
<tr>
<td>Commercial Bank, Greenwood</td>
<td>4,000.00</td>
</tr>
<tr>
<td>Bank of Pendleton, time deposit</td>
<td>5,000.00</td>
</tr>
<tr>
<td>Bank of Pendleton, checking acct.</td>
<td>64,495.73</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$142,495.73</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less checks outstanding (list exhibited)</td>
<td>20,985.31</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$121,510.42</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash in office, (Student deposits)</td>
<td>392.10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$121,902.52</strong></td>
</tr>
</tbody>
</table>
Report of South Carolina Experiment Station

FOR FISCAL YEAR 1920-21.

To President W. M. Riggs,

Clemson College, S. C.

Dear Sir

The period covered by this, the thirty-fourth annual report of the South Carolina Experiment Station for the fiscal year ending June 30th, 1921, represents one of the most discouraging years in the history of agriculture. Crops and livestock produced at unprecedented high cost for fertilizer and labor and feed had to be sacrificed at a fraction of what it cost to produce them. All farming operations were conducted on a large scale, so the financial losses were exceedingly heavy. Had it not been for the carrying out of the diversified programs promoted by our research and extension agencies, our people would have actually suffered for lack of food.

It is during periods of depression and uncertainty that agricultural research is most appreciated and the results of the experiment station work most in demand. During the recent world war, when every effort was being made to increase the food supply by stimulating crop production, very heavy demands were made upon all of our research agencies, and all scientific data bearing upon production were used. In like manner, during the past year, when prices for agricultural products were at the bottom and the boll weevil had invaded a large part of the state, the people have turned to the research workers for advice and for plans with which to meet the situation. Fortunately our experiment stations have been working along the lines of diversification and have been studying the methods of producing and handling new crops and are in a position to furnish much needed assistance during these trying times when our agriculture is adjusting itself to the rapidly changing conditions.

All lines of our research work have made progress during the year, and much valuable information has been added to our agricultural knowledge through the efforts of our corps of scientists. The appropriation made by our last legislature for agricultural research has enabled us to continue important lines of work, which were lagging for lack of support, and to add a few new projects, which are yielding data of fundamental importance. Ever increasing demands are being made upon our staff, and we feel the need
of increased facilities to enable us to meet these demands. Our research workers are looked to as the chief technical advisors along all agricultural lines—the business in which three-fourths of our people are engaged—and they can only direct this great enterprise along safe and sound lines in so far as they have scientific data upon which to base their conclusions and recommendations. Reliable agricultural information can of course be derived only from intelligently planned and carefully conducted experiments.

The agricultural products of South Carolina for 1919 were valued at five hundred and seven million dollars ($507,000,000), and those of 1920 at two hundred and eighty-two million dollars ($282,000,000). If only one-tenth of one percent of this latter amount could be devoted to finding out new facts about this our chief industry, many puzzling problems which are now retarding the progress of our people could be solved and our future agricultural development assured. The average income from agricultural products in South Carolina in 1920 amounted to nearly forty-one dollars ($41.00) per acre for each acre of cultivated land. Less than one cent per cultivated acre of this amount was spent for agricultural research.

A short discussion of the different lines of work is given below.

**EXPERIMENTS WITH CROPS**

Seventy-two percent, or two hundred and three million dollars ($203,000,000) of the two hundred and eighty-two million dollars ($282,000,000) worth of farm products produced in South Carolina last year was produced by ten of our principal field crops. Diversification is making rapid strides in our state, and yet we must expect that the larger share of our income will always be from what are termed our common field crops. Successful farming with us, therefore, is largely a matter of economic crop production.

There are many factors involved in economic crop production. The most important of these is the productive capacity of the soil as affected by crop rotations, soil building crops, winter cover crops, the judicious use of fertilizers, better terraces, and better drainage. Other important factors are more productive and better strains of crops and better tillage methods and cultural practices.

These factors are being investigated by the research department of Clemson College and by the experiment stations, and our experiments have already demonstrated methods of soil building which increase the average yields per acre from seventy-five to one hundred percent. These experiments have also proved that the yields of our field crops can be increased from fifteen to fifty percent by the use of the best seed of the better varieties, and have demonstrated cultural practices and methods of farm management which are leading to more profitable production.
EXPERIMENTS WITH FERTILIZERS.

Since South Carolina expends annually from twenty-five to fifty million dollars for fertilizers, an amount larger than that of any other state in the Union, it is but natural that the fertilizer problem should loom large before our farmers and that the South Carolina Experiment Station should devote a large share of its energy towards determining the most judicious use of fertilizers. The practices now in vogue in this state are quite largely based on the results secured from our experiments during the past years. Fertilizers, however, can be most efficiently used only after we understand what combinations and amounts are best suited to the different soil types, and to the different crops; the time and method of their applications; and the relation they bear to plant development. It is along these lines that we are now directing our experiments in the hope of determining a way by which our fertilizer investments will yield the highest return.

Aside from the regular fertilizer investigations which we are conducting on our experiment stations, one of the most important lines of work conducted this year was the co-operative tests conducted on the farms of some of the most progressive planters in the state. We now have the data from two crops on some of these tests and these are proving of great value to the farmers of the state. There are five different soil types included in these experiments now and others will be added next year. The results so far indicate that nitrogen is the principal limiting factor for both cotton and corn. Especially has this been true on the lighter types of soil. At Allendale we have had a striking example of how well the necessary nitrogen may be supplied by growing legumes such as velvet beans in the corn middles.

EXPERIMENTS WITH BEEF CATTLE AND HOGS

Diversified farming and livestock production go hand in hand. Wherever we find a great livestock country we find a prosperous people. The livestock business in South Carolina is developing as rapidly as good fences and home grown feeds will permit. We have at present more than a million hogs in the state. The livestock barns at the state fair, as well as at the local community and county fairs, are crowded with purebred hogs and cattle. This thoroughly demonstrates the increased interest in this very important phase of agriculture.

There has never been such a demand for experimental results and reliable information relative to the production and feeding of livestock, as there is at this time. The demands are so insistent and the inquiries so varied that the experiment station finds it impossible to answer all of the questions, or to solve all of the problems which are confronting the South Carolina farmer at this
critical time. There are many of the crops which are of special importance in livestock production and feeding that have never been sufficiently tested in the South. In the work which this station is conducting at this time, we are emphasizing crops which are most productive in this section and are attempting to work out forage combinations and rations which will enable us to produce beef and pork economically.

This station has already produced results which are a great saving to the livestock men of the state. Upon advice from the station, based upon experiments, many farmers have changed from the dry lot feeding to the free use of forage crops, thereby saving at least one-third of the grain ration. They have also learned from experiments to supplement corn with tankage and fish meal, in this way balancing the ration and producing more rapid and more economical gains.

Soft Pork Studies.—The soft pork question is the most important problem confronting the swine growers of the South. Many of our crops and feeds, such as peanuts and soy beans, which produce the most economical and most rapid gains of pork, produce hogs whose fat is soft and has a low melting point as compared with the fat of hogs produced on cereals and other grain. The packers and purchasers of hogs discriminate against such pork and offer from two to four cents less per pound for it than they pay for hard pork. Our problem is to find some way to utilize these cheap and productive crops and feeds in such a way as to produce pork that will kill hard and bring the top of the market. Our investigations along this line are conducted in co-operation with the United States Department of Agriculture and the other southern experiment stations. We completed one test along this line last year and have thirty-six hogs now grazing on peanuts. These will be placed on dry lot feeding tests after eight weeks on peanuts and different feeds used in an attempt to harden them.

PLANT DISEASES

The botany division continues to investigate various diseases of plants which are prevalent and destructive in this state. Fungal and bacterial diseases of plants take a much larger toll of our crops each year than is commonly realized. Last year the plant disease survey report of the United States Department of Agriculture, compiled in co-operation with this office, showed the following losses caused by plant diseases in South Carolina: Cotton, 122,000 bales; corn, 3,648,000 bushels; oats, 748,000 bushels; wheat, 132,000 bushels; sweet potatoes, 3,246,000 bushels; Irish potatoes, 155,00 bushels; and peaches, 295,000 bushels. When converted into dollars and cents the losses last year from these seven crops alone, at present prices, totaled about twenty million
dollars ($20,000,000),—three times the total amount appropriated by our legislature this year for all purposes, and four hundred times the amount appropriated for agricultural research.

These losses from diseases of plants are frequently attributed to other causes. If our peaches or grapes rot, if our cotton fails to open, if our corn turns yellow and dries up in the field and produces mouldy and rotten ears, or if our sweet potatoes are scabby, ill shaped and rough and rot when put in storage, we are apt to charge these troubles to poor seasons or bad luck, when as a matter of fact some definite plant disease is usually responsible for the loss.

These destructive diseases of plants, like the diseases of animals and of man, yield readily to scientific treatment when the causes are known and the habits and behavior of the organisms which cause them are understood. As a result of the research work of this division, cotton anthracnose, a fungous boll rot of cotton, which formerly caused from three to five million dollars loss each year in South Carolina, has been practically eliminated from the state and its ravages greatly reduced throughout the entire South.

Other destructive pests are being taken up and investigated in a similar manner and control measures worked out as rapidly as our time and facilities permit.

BACTERIA IN MILK.

During the past three years the associate bacteriologist of the station has conducted a study of the bacterial content of milk with a view of determining the behavior and development of bacteria during the different periods of handling milk from the time it is milked until it reaches the consumer. The dairymen of the South are concerned chiefly with the furnishing of whole milk to the nearby markets, and this project was undertaken with a view of determining practices and methods of handling milk which would keep down the bacterial content.

A careful study has been made of the so-called germicidal property of milk and the bacterial development during the first two to four hours after milking. Where the milk was drawn from the cows into sterile flasks and then plated out in the laboratory at two-hour intervals, the counts showed that when the initial bacterial content of the milk is low there is no marked increase in the number of bacteria during the first four hours. This would seem to give plenty of time to get the milk cooled down to a temperature which would inhibit bacterial growth.

From these studies thus far it appears that the production of certified milk is largely a matter of sterile utensils, and cleanliness in milking and handling the milk.
EXPERIMENTS WITH DAIRY CATTLE.

During the years 1914—16, when cotton prices were low and our farmers were unable to make a living by the single crop system, many of them turned to dairying. Four creameries were established for the purpose of furnishing markets for the dairy products produced by several thousand farmers of this state. This development was practically lost during the period of the war, when prices of cotton were high and labor was scarce, but since the advent of the boll weevil and the unprecedented decline in prices of all commodities during 1920, farmers are again turning to the dairy business, and the indications are that this will develop very rapidly into one of our most profitable lines of endeavor. It is estimated that we are expending about four million dollars ($4,000,000) annually for butter which is brought in from other states. The diversified method of farming which we are now advocating involves the growing of more feed, and the dairy cow will make a greater profit on this feed than any other animal to which we can feed it.

Advanced Register Testing.—The official testing of dairy cattle is the most important project we are conducting with cattle at present. This consists of keeping accurate records of the yearly production and butter-fat content of certain cows in our own herd at Clemson College and of a limited number of individuals in the herds of the most progressive dairymen of the state. All of the work is supervised and managed from Clemson College and all of the records are certified to by the head of the dairy division of the experiment station. The actual testing of the herds in the state is done by men employed by this office but paid by the cow testing association.

By fostering the Advanced Register work in this state we are gradually raising the average production of the milk cows in South Carolina. It is the only accurate method we have for determining the actual value of a milk cow. In 1918 there were only three breeders in the state testing their cattle for advanced register records. Now there are twenty-five breeders doing this work. Since July, 1920, thirty-one yearly Holstein records have been completed in the state. These records average 14,262 pounds of milk and 486.44 pounds of butter-fat. During the same period twenty-nine Guernsey records have been compiled with an average of 8,884.6 pounds of milk and 438.32 pounds of butter-fat; also twenty-one Jersey records with an average of 6,997.4 pounds of milk and 382.17 pounds of butter-fat. This makes a total of eighty-one records completed since July, 1920, with a general average of 10.048 pounds of milk and 435.64 pounds of butter-fat. The average dairy cow in the United States produces about 150 pounds of butter-fat in one year, so during this year we have developed in
South Carolina eighty-one records which average nearly three times that of the average cow. At the present time we have ninety-seven additional cows on test.

This work is of special importance at this time because through it we are developing seed stock for our state, which we can depend on to increase the production of the native cattle and in this way make the dairy business more profitable. At the present time there are 213,000 milk cows in South Carolina and we need 240,000 more to meet the rural needs for milk and its products, to say nothing of the needs of the towns and cities. We need 2,560 more purebred dairy bulls in the state at the present time. By encouraging this Advanced Register work we may supply these bulls within the next ten years from our own herds. This is a much better way than to buy such seed stock at high prices from without the state and run the risk of bringing in diseases such as contagious abortion and tuberculosis.

We have a number of experiments under way testing the value of different southern grown feeds in milk production and we are making a careful study of the value of different systems of breeding dairy cattle.

INSECT PESTS.

Insect pests, like plant and animal diseases, constitute an increasingly serious problem for the farmers of the state and for the people in general. Insects of one kind or another attack everything that grows, both plants and animals, and the damage caused to individual crops often amounts to millions of dollars in one season. We not only have the native pests to deal with, but insects new to our state are constantly coming from other states and countries. To cope with these successfully taxes the skill, ingenuity, and technical ability of our scientists to the utmost. Even with the application of all of the available scientific knowledge, some of the pests can not be controlled successfully.

In our investigations of these pests at this station we have undertaken detail studies of the life cycle, habits and behavior of the insect in question as influenced by seasonal and weather conditions and farm practices. In this way we have been successful in some cases in working out what might be termed natural control measures which can be fitted in with the common farm practices. By use of a system of keeping accurate records on the natural enemies, weather conditions, etc., and noting the effect of these on the activity of certain insects, our entomologist has been able to forecast outbreaks of some of our most destructive pests, thereby enabling the farmers to institute control measures.

The work with insect pests has been concerned largely with the
activities of the wireworm, the red spider, the root louse, the peach borer, the Argentine ant, and the boll weevil, together with carefully conducted experiments on the temperature-moisture relation to insect activity. It has been found that the wireworm is not a destructive pest on land where a good program of soil building is practiced. Applying this to practical farming conditions, it develops that this pest can be controlled by increasing the humus content of the soil by the intelligent use of cover crops and summer legumes. Barnyard manure and swamp muck are very valuable when available.

In the case of the red spider our investigations have shown this pest to be dependent upon (1) winter food plants allowed to grow up on the farm, (2) winter minimum temperatures, (3) summer humidity. The last two are things over which we have no control, and fortunately they are not as important as is the first. The prevalence of such winter food plants as poke weeds and long stemmed violets is an important factor in promoting red spider outbreaks.

The cotton root louse is another pest mainly dependent upon winter food plants, prominent among which is life everlasting or “rabbit tobacco.” A successful winter cover crop will eliminate any winter food plants and greatly delay the spring recolonization of this pest.

Extensive tests looking to the control of the boll weevil were conducted at the Coast Station at Drainland this season. These experiments included variety studies, collecting weevils, weevil life history studies, and stripping squares, and involved the use of hibernation cages, and poisons. Some of this work was tried out also at the Pee Dee Station after heavy rains made the operations at the Coast Station almost impossible. Our studies of this problem convince us that the weevil cannot be controlled by any single operation or practice, but only by combining the principles of all the different methods developed by the states south of us; that is to say, we must practice early destruction of stalks, clean, rapid and shallow cultivation, picking squares and weevils, early planting of early varieties of cotton, and poisoning.

The temperature-moisture problem has grown to be one of the most interesting problems connected with insect studies. It develops that these factors are so closely related to insect activity as to determine (1) the success or failure of any insect to pass the winter; (2) the rate of increase in a given season on a given crop; (3) the ability of the crop to withstand the attack; and (4) the success or failure of natural insect enemies in keeping the pest in check. With a better knowledge of these relationships we may expect to be able to check successfully a pest by eliminating conditions favorable for successful wintering; to anticipate the severity of an impending outbreak; and to determine when, where and or what crops the outbreaks will occur.
EXPERIMENTS WITH FRUITS AND VEGETABLES

The varied soil and climatic conditions of South Carolina permit the growth of a great variety of fruits and vegetables during practically all seasons of the year. With the advent of the boll weevil our people are undertaking the production of fruits and vegetables on a commercial scale for profit. Large peach orchards are being developed, especially in the sandhill region, and trucking is being engaged in on a large scale in some of the counties bordering the coast.

This experiment station follows the practice of conducting tests from time to time, with the principal fruits and vegetables with a view of determining which varieties are best for home use and for commercial plantings. We have also tried out a great many different kinds of plants introduced from foreign countries by the Office of Seed and Plant Introduction of the United States Department of Agriculture. In many cases where fruits and vegetables are being grown on a commercial scale, fertilizer tests have been made and cultural practices studied. Much of this work is conducted at our Coast Station and at the Pee Dee Station, because these stations are in sections where trucking is engaged in to a large extent.

Experiments carried on over a period of years show that thinning peaches is a profitable orchard practice since peach trees have a tendency to set more fruit than the tree can properly develop. Thinning was done after what is known as the "June drop" and when the young peaches were about the size of a hickory nut. The fruit allowed to remain was spaced as nearly as possible 4 to 5 inches apart, so the fruit would not touch at maturity.

At picking time it was found that the yield on the thinned and unthinned trees was about equal, but a great difference was found in size and color of the fruit. On the thinned trees 90 to 95 percent of the fruit was of good size, well colored, and of a better quality, and the number of culs was negligible; while the fruit from the trees not thinned had 40 percent large, well colored fruit, and 60 percent small, pale colored fruit and culs. These differences were further augmented in the price received for the fruit, as we obtained a third more for the thinned than for the unthinned fruit.

Valuable data have been secured during the year from variety studies with lettuce, Irish potatoes and cantaloupes, and the results are being prepared for publication. These show that the varieties of muskmelons tested, Emerald Gem, Burrell Gem, Jenny Lind, Rocky Ford, and Extra Early Hackensack, are well adapted to this section and produce melons of excellent quality. The lettuce tests indicate that Big Boston and Improved Hanson are best for commercial plantings, and Big Boston, Improved Hanson, and Mignonette best for home use and for local markets. Of the
twenty varieties of Irish potatoes tested, Spauldings Rose No. 4, Irish Cobbler, Bovee, and Early Rose, gave the best yields, producing 285, 273, 272, and 271 bushels per acre respectively.

THE CLEMSON COAST EXPERIMENT STATION

The Coast Station is located on the cut-over pine lands of the lower coastal plain, at Drainland, twenty-four miles northwest of Charleston, on the Southern Railway. There are over two million acres of cut-over lands in South Carolina, and this station was started in 1908 for the purpose of conducting experiments in reclaiming these lands and utilizing them for agricultural purposes. Some splendid results have been obtained from the experiments with field crops, fertilizers, fruits, and vegetables, and these have been published from time to time. This station was established by the Board of Trustees of Clemson College and until 1920 was supported entirely with college funds. During the years since 1914, when the college had hardly had sufficient funds to run on, this sub-station suffered from lack of support and little progress was made with the experimental work. Since the legislature began at the session of 1920 to make an annual appropriation for the support of agricultural research, considerable progress is being made with the several important lines of work under way.

This station is located on low flat land about seventy-five feet above sea level and it is necessary to underdrain the entire area that is in cultivation. The drainage system which was installed during 1908 and 1909 had not been working satisfactorily during the past few years, and during the spring of 1920 the whole system was investigated by the Office of Drainage Investigation of the United States Department of Agriculture, and it was found that some of the tile in many of the lateral ditches were completely filled up with soil and sediment. In accordance with recommendations made by the drainage engineers, all of this tile was taken up in the fall of 1920 and cleaned out and re-laid. Each joint was wrapped with building paper and covered with straw before refilling the trenches, and it is believed that no further trouble will result from the tile filling up with soil. This work involved the digging up, cleaning out, and relaying of 10,616 yards of tile at a labor cost of a fraction less than fifteen cents per lineal yard.

During the very excessive rains which began June 25th and lasted through August 18th, our drainage system was given a very severe test. During this period of 55 days we had rain 41 days, the total precipitation for the period being 16.69 inches. In spite of this fact the crops on the areas which have tile drains at distances of 60 feet made fair yields and while of course they suffered considerably from wet weather, they did not suffer to the extent to which the crops suffered where the tile lines were 120 feet apart. In order to make this entire system function efficiently
throughout, it will be necessary that all of the lateral ditches be only 60 feet apart. Plans are under way for doing this.

Additional land for cultivation is badly in need for our experimental work with field crops and for growing forage for the beef cattle and hogs. During the summer work was begun on clearing and underdraining an area of approximately twenty acres of land situated on the front part of the property. This area which we are clearing will greatly facilitate the experimental work at this sub-station. This land, with that already cleared, will give us about 100 acres for cultivation.

We believe that practically all of this cut-over pine land of the low country can be profitably utilized in the production of beef cattle. The native grasses, however, will not stand close grazing and will not carry a sufficient number of cattle to enable the industry to develop as it should. We have therefore undertaken to determine the best grasses and pasture plants to use and the best methods of developing permanent pastures in this section. So far carpet grass and lespedeza are giving us better results than any other plants tested.

We are endeavoring to build up a producing herd of purebred and high grade beef cattle to use in our pasture and feeding experiments. The present herd has developed satisfactorily during the year so that we now have forty-eight head. About half of these are purebred Angus. The cattle were turned on pasture about the first of March this year and can be kept there until November, when they will be turned into the fields for a month or two before going to the barns for the winter.

Alfalfa sown at this station last fall has produced four cuttings of excellent hay, yielding a total of over three tons per acre. Where lime was not used on a part of the alfalfa, the crop was almost a complete failure.

A number of new grasses brought in from other countries are being tested. The most promising of these is "Fundi," a grass resembling crab grass in general appearance and brought in from South America. This gives a good yield of hay.

The variety tests with peaches and grapes at this station were completed last year and the trees and vines taken out to make room for crops of other kinds. These experiments showed clearly that peaches and grapes can be grown successfully and profitably in this section, if they are planted on high well drained land. The grapes, especially when planted on land where the water table is not more than two or three feet below the surface, did not do so well. Of the varieties of peaches tested the best results were obtained with Greensboro, Carmen, and Elberta. With bunch grapes, the best were Brighton, Concord, Niagara, and Luise. With muscadines, the best were Eden, James, Scuppernong, Thomas, and Flowers.
We have just completed a beef cattle barn which is badly needed in connection with our livestock work. This barn has ten stalls for cows and calves, a grain room, and a large loft space of hay, with two open sheds thirty-eight feet long, for feeding cattle. The barn is comparatively inexpensive, but is large enough and so arranged that it will take care of seventy-five head of cattle. We are very much in need of several small tenant hounses for laborers at this station and it is hoped we can build these next year.

THE CLEMSON PEE DEE EXPERIMENT STATION.

The work at the Pee Dee Station has made rapid progress, and the manner in which the people of the state and especially of the Pee Dee section have availed themselves of the facts about farming so aptly demonstrated there is indeed gratifying and encouraging. Almost daily there are interested visitors at the Pee Dee Station, often coming in crowds, and always expressing themselves as having been benefited by what they have seen, and going away more determined to be better farmers and more useful citizens.

The work from the outset has been largely with the field crops and fertilizers, because these were the most important problems of the Pee Dee section. Numerous experiments have been conducted, however, with fruits and vegetables, and some very interesting experiments have been made with hogs.

Experiments have been conducted at the Pee Dee Station for the purpose of determining the best varieties of all the leading crops in that section. Variety tests have been made with cotton, corn, soy beans, peanuts, sweet potatoes, and velvet beans, in addition to a number of orchard and garden crops. In these tests sometimes as many as forty varieties of the same crop have been under observation at the same time, Dixie Triumph, Cleveland, Webber No. 49, and Delta-type Webber cotton, and Brunson, Douthit, Garrick, Pee Dee No. 5, and Williamson corn, have been among the highest producers.

Breeding work has been undertaken at this station with cotton, corn, sweet potatoes, and peanuts. Superior strains of Dixie-Cook and Cleveland cotton, Pee Dee No. 5 corn, Porto Rica sweet potatoes, red Spanish peanuts, have been isolated through continuous selection and these are being further improved and increased for trial and for distribution to farmers.

Fertilizer Experiments.—The fertilizer work has been in progress at the Pee Dee Station since 1913 without any appreciable alteration of the plans as they were originally perfected. The general comparative tests with fertilizers, consisting of one hundred and eighty (180) plots of one-tenth acre each, constitute what is perhaps one the most comprehensive fertilizer investigations in the country. The detailed results of this work are being prepared for publication in bulletins. Important among these fertilizer investigations are
those which are yielding valuable data on (1) rotations, (2) value of certain fertilizer combinations, (3) residual effects of fertilizers, (4) sources of essential elements, (5) theoretical amount of fertilizer necessary to produce a bale of cotton, and (6) time of applying.

A special test is being made on tobacco with the view of determining the relation of fertilizers to yield and quality of tobacco. This year as many as fourteen different formulas were tested under tobacco. From the results of this experiment we are convinced that the average farmer has been using too much fertilizer to make the best quality of tobacco. Fertilizer tests and rotation studies are also being conducted at this station with peanuts and sweet potatoes.

During the last few years variety experiments have been conducted at the Pee Dee Station for the purpose of determining the varieties of the various fruits and vegetables most adaptable to the Pee Dee section. The work along this line has gone far enough to convince us that some varieties of all the various fruits and vegetables can be grown successfully in the Pee Dee section. These experiments lead us to recommend the Moore’s Early, Brighton, Lucile, Niagara, and Delaware varieties of grapes; the Carmen, Mamie Ross, Hiley, Belle of Georgia, Elberita, and Burke Cling varieties of peaches; Shiro, Abundance, and Burbank, plums; Lady Thompson and Klondyke strawberries.

During the last fall two four-room tenant houses were constructed at this station for negroes, and we now have sufficient housing facilities here to take care of the majority of the laborers needed on the station farm.

Library.

The agricultural workers of the college and the experiment station have for years felt the need of a working library where all of the publications from the various state experiment stations, the United States Department of Agriculture, and foreign countries were readily accessible and available for study and reference. Agricultural research as well as teaching and extension can be conducted satisfactorily only when the workers have ready access to all of the published information on any problem that engages their attention. This is the second year during which we have had a trained librarian engaged in classifying and cataloguing the mass of valuable material which we have accumulated during the past thirty years.

The librarian’s annual report shows books accessioned and made ready for the shelves, 797; volumes bound, 336; volumes in temporary binders, 73; volumes collated for binding, 169. The above does not include the routine work of checking and making accessible 7,214 copies of bulletins and 2,948 copies of agricultural journals, besides 10,562 pieces of minor mail, consisting largely of circular material on agriculture.
With the changing conditions in our agriculture, there is a great increased and increasing demand for publications. Publications are in greater demand and seem to be more highly appreciated than ever before. The distribution of the publications of this fiscal year has been noticeably greater than in former years.

Four bulletins Nos. 203 to 206 inclusive, and an annual report for the year ended June 30, 1920, have been issued during the year.

PROJECTS UNDER WAY.

The following is a list of projects now under way in the Research Department.

Agronomy Division—

- Cotton variety tests
- Corn variety tests
- Peanut variety tests
- Wheat variety tests
- Velvet bean variety tests
- Soy bean variety tests
- Cowpea variety tests
- Oat variety tests
- Sorghum variety tests
- A study of the inheritance of barrenness in corn
- Inheritance in oats
- Breeding corn
- Breeding cotton (Cooke)
- Breeding wheat
- Breeding barley
- Breeding peanuts
- Breeding work with cotton (general)
- Corn and cotton two-year rotation
- Rotation and fertilizer tests
- Cotton spacing and culture tests
- Corn culture tests
- Effects of companion crops on corn
- Factors influencing oil content of cotton seed
- Effects of soil stirring on moisture, nitrification, yield, etc.
- General fertilizer tests
- Comparative tests of sources of phosphorus
- Comparative tests of sources of nitrogen
- Tests of sources of ammonia for top-dressing cotton
- Effect of Trona potash on cotton and corn
- A test of methods of applying fertilizers
- Tests of theoretical correct fertilizer formulas
- Cooperative fertilizer experiments, cotton, corn, oats, peas
Animal Husbandry Division—
Comparison of forage crops in pork production
Velvet bean meal vs. soy bean meal for fattening hogs
Permanent pasture experiments
Fish meal vs. tankage for hogs
Soft pork investigations
Bur clover and Bermuda vs. dry lots for growing gilts
Pig feeding experiments
Horse and mule breeding experiments
Hampshires vs. Southdowns in the South

Botany Division—
Plant disease survey of South Carolina
Cotton anthracnose investigations
A study of cotton root diseases
Bacterial diseases of cotton
Cotton shedding work
Cowpea and cotton resistance to root knot
Rust resistance in small grains
Tests with imported grass and forage plants
A study of the bacterial content of milk
Forestry plantings.

Dairy Division—
Economic concentrates to supplement cottonseed meal for dairy cows
Corn silage vs. sorghum silage
Cost of raising dairy calves
Prepotency of bulls used in our herd
Line breeding and out-crossing as systems of breeding
Advanced register testing of dairy cows

Entomology Division—
Temperature-moisture in relation to insect activity
Cotton root louse studies
The slender wireworm and its control
Root knot studies
Control of peach tree borers
Factors affecting boll weevil hibernation
Cotton boll weevil control by dusting with calcium arsenate
South Carolina honey flows
Winter packing of bees
The value of the aluminum honey comb

Horticultural Division—
Variety tests of peaches
Variety tests of pears
Variety tests of grapes
Variety tests of strawberries
Variety tests of pecans
Variety tests of potatoes
Variety tests of muskmelons
Variety tests of tomatoes
Variety tests of lettuce
Sweet potato investigations
Irish potato investigation
Studies in grape spraying
Peach thinning experiments
Test with rust-resistant asparagus
Breeding fruits
Breeding sweet potatoes
Breeding blackberries and raspberries
Cooperative fertilizer experiments with lettuce and potatoes.

Respectfully submitted,

H. W. BARRE,
Director of Research.
To Pres. W. M. Riggs,

Clemson College, S. C.

Dear sir:

About the first of July, 1920, the beginning of the fiscal year with which this report deals, our people had passed through a period of prosperity without parallel in the history of this country. Fortunes were made over night. Land values assumed proportions that many conservative and thoughtful men felt were not for the best interest of the country. An orgy of spending and extravagance had been indulged in to the extent that had it continued would have undermined the sturdy manhood and womanhood of our youth. If at this time a wise leadership had prevailed it could have performed a service to the state that would have been of inestimable and lasting benefit to our people. Hundreds of thousands of bales of cotton were being held by advice from the markets in South Carolina ultimately causing great loss to the people when at the same time hundreds of thousands of bales of cotton were being offered on the markets in the state of Texas greatly to the gain and profit of the people of that State. During this unfortunate period the Extension Service maintained a discreet silence, answering all inquiries as to the advisability of selling or holding cotton that it was a matter to be determined by the individual. It was our belief then, as it is now, that public officials should be most careful in their advice to the people, speaking definitely only when their information is based on actual facts. The financial loss and severe disappointment brought about a state of mind that made it impossible for many of our people to look at things clearly and there was a disposition to criticize all undertakings of a public character. The Extension Service did not escape this criticism as was shown at the tax payers' convention that assembled in Columbia in January during the meeting of the Legislature. After time for reflection the attitude of the people, as is generally the case when unwisely advised or led, changed and our appropriation was made with no dissenting vote being cast in either branch of the Legislature. It is necessary for the funds of the Extension Service to be supplemented with county funds. There were only four counties out of the forty-six that failed to make their county appropriation.
Our relations with the various organizations in the state are of the most cordial character. We have co-operated with the Cotton Association and Warehouse Commissioner to the extent that in our campaign last Fall for additional cotton warehouses there were constructed over 700 additional warehouses, providing sufficient space to store fifty per cent of a normal cotton crop. We also have co-operated with the Development Board, the Sweet Potato and Tobacco Marketing Association, a number of Chambers of Commerce, and in fact it is our policy to work with every agency making a sincere effort to help develop the agriculture of the state. To my mind the fact that the farmers in South Carolina in 1920 had in 820,000 acres more of food crops than they did in cotton, notwithstanding that cotton had been sold during the planting season at a higher price than at any time in the past fifty years, is the best evidence that the preachments of the College for a diversified agriculture were impressing themselves upon the minds of the farmers of the state. South Carolina came nearer feeding itself in the last twelve months than at any time in its recent history.

The Extension Service is now engaged in the largest and most important undertaking within its history, the organizing of the farmers for the co-operative marketing of cotton. At the same time the Extension Service in many of the southern states, notably Texas, Arkansas, Mississippi, North Carolina, Oklahoma and Alabama, are performing the same service, and meeting with more or less success, with the prospect of ultimately thoroughly organizing the farmers in their respective states. Oklahoma has finished its campaign, having signed up 34,000 farmers to their crop contract and controlling 400,000 bales of cotton. Texas is making a vigorous effort to sign under the contract 1,000,000 bales of cotton. Mississippi has up to date signed 200,000 bales and progress is being made in the other states. Our active campaign begins some time during the present month (July) in Spartanburg and Marion Counties. We thought it advisable to proceed in a conservative way confining our efforts for the time being to spreading information and assisting with educational meetings, and at the same time profiting by the mistakes that would most likely occur in the other states. We are convinced that our policy has been a wise one.

In addition to the above general statement I would like to call attention to the following short statements concerning each project.

Project No. 2. Printing and Distribution of Publications

One extension bulletin, seven extension circulars, seven information cards, 121 news letters, and six columns of free press plate service have been published during the year. In addition, one issue each week of the Weekly News Notes has been published. We have also published an annual report of the Extension Service for the year 1920. The Weekly News Notes was enlarged during May and now carries one more column and much more material than formerly.
Project No. 3. County Agents.

We have adhered this year to the policy of employing only men who are qualified both through agricultural college training and through experience to positions as county agents. The work of our agents has consequently been very practical and definite and along well organized lines. The past year put county agent work to the most severe test. The fact that the people of South Carolina now face the boll weevil problem in its full seriousness, coupled with the swift collapse of prices of farm commodities, has had a tendency to make people economize in every possible way. County agent work, however, is generally regarded as more necessary than ever. Most of our agents have risen admirably to the opportunities for service which conditions have put before them. County agents are more than ever being regarded as the paid field force of the agricultural interests of the state and they, therefore, must be men of excellent training and ability.

Results Accomplished by County Agents

The following is a summarized statement showing some of the results accomplished during the calendar year 1920 by county agents and is compiled from the individual annual reports of the agents:

Organization—
Number of community clubs organized, 98; membership, 4,141.
Number of community clubs in counties, 160; membership, 6,985.

Co-operative Buying and Selling—
Number of farmers' organizations buying and selling co-operatively, 23.
Value of stuff bought and sold co-operatively, $5,553,367.56.
Saved by buying and selling co-operatively, $162,373.04 (partial only.)
Number of agents keeping bulletin boards, 15.

Crops—

<table>
<thead>
<tr>
<th>Crop</th>
<th>Dem.</th>
<th>Acreage</th>
<th>Average Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number corn demonstrators</td>
<td>588</td>
<td>8,281</td>
<td>39.2 bushels</td>
</tr>
<tr>
<td>Number cotton demonstrators</td>
<td>448</td>
<td>9,608</td>
<td>1,453 pounds</td>
</tr>
<tr>
<td>Number tobacco demonstrators</td>
<td>126</td>
<td>946</td>
<td>812 pounds</td>
</tr>
<tr>
<td>Number small grain demonstrators</td>
<td>1,809</td>
<td>17,874</td>
<td></td>
</tr>
<tr>
<td>Number hay and forage demonstrators</td>
<td>1,314</td>
<td>7,927</td>
<td>2.1 tons</td>
</tr>
<tr>
<td>Number small legume demonstrators</td>
<td>1,006</td>
<td>16,841</td>
<td>1.6 tons</td>
</tr>
<tr>
<td>Number Irish potato demonstrators</td>
<td>107</td>
<td>3,400</td>
<td>132 bushels</td>
</tr>
<tr>
<td>Number sweet potato demonstrators</td>
<td>258</td>
<td>904</td>
<td>152 bushels</td>
</tr>
</tbody>
</table>

Totals .................................. 5,150 64,375

Orchards—

<table>
<thead>
<tr>
<th>Orchard</th>
<th>Num.</th>
<th>Num.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of orchards inspected</td>
<td>1,266</td>
<td>101,557</td>
</tr>
<tr>
<td>Number of orchards pruned</td>
<td>1,664</td>
<td>75,554</td>
</tr>
<tr>
<td>Number of orchards sprayed</td>
<td>921</td>
<td>74,119</td>
</tr>
<tr>
<td>Number of orchards wormed</td>
<td>921</td>
<td>50,088</td>
</tr>
<tr>
<td>Number of orchards planted</td>
<td>345</td>
<td>29,782</td>
</tr>
</tbody>
</table>

Totals .................................. 5,117 330,100
Number of commercial orchards agents assisted in caring for, 54.
Number of trees sprayed, 13,160; pruned, 28,059; wormed, 6,204; total—47,423.
Totals: Orchards—5,171; trees—377,523.

Dairy Cattle—
Number of purebreds brought in; bulls 116; cows and heifers 461.
Number of grade dairy cows, 327.
Number feeding better balanced rations, 588.
Number of stock so fed, 3,064.
Number of purebred dairy bulls in State, 574.
Number of purebred dairy cows in State, 4,011.
Number of cream routes established during year, 3
Number of purebreds sold with agents' help, 275.

Beef Cattle.—
Number of purebreds brought in; bulls, 73; cows and heifers, 278
Number of grades brought in, 364.
Number of beef-breeding herds started, 31.
Number of feeding cattle brought in, 2,135.
Number of beef feeding demonstrations conducted, 36; cattle, 1,491.
Number of beef cattle cared for by agents' advice, 2,798.
Number of purebred bulls in State, 425.
Number of beef cows in State, 3,593.
Number of purebreds sold with agents' help, 227.

Hogs—
Number of purebreds brought in; boars, 330; sows, 1,239.
Number of herds started, 297.
Number of hog feeding demonstrations supervised, 143.
Number of hogs in these demonstrations, 1,532.
Number of self-feeders placed, 93.
Number of purebred hogs sold with agents' help, 2,196.
Number of farmers started with grazing crops, 1,344.
Number of hogs cared for or fed by agents' advice, 25,861.
Number of purebred boars, 4,596.

Live Stock Diseases and Pests.—
Number of stock, agents, extension workers, and others have induced farmers to have treated for diseases of pests.
Number of cattle; for blackleg, 3,265; tuberculosis, 4,085; digestive and other troubles, 1,275; hemorrhagic septicemia, 813.
Number of hogs; for cholera (single), 10,241; (simultaneous), 68,351; worms, 10,697; lice, 43,956; mange, 4,484.
Number of horses; for distemper, 120; digestive troubles, 267; accidents 114; other troubles, 22.
Number of above treated by agents:
Cattle: Blackleg, 1,851; tuberculosis, 1,432 (1 county).
Hogs: Cholera, 60,761.
Number of agents having instruments for treatment, 46.

Fertilizers.—
Number of farmers advised concerning, 11,929.
Number of fertilizer demonstrations conducted, 392.
Number of tons used on them, 1,568.
Number of communities buying co-operatively, 89.
Amount bought co-operatively, 12,950 tons.
Amount saved, $68,741.
Number of farmers home mixing, 2,773.
Number of farmers top dressing, at agents’ advice, 7,740.

Manures.—
Number of farmers induced to take better care, 1,583.
Number of farmers providing sheds by agents’ advice, 686.
Number of farmers composting by agents’ advice, 4,950.
Number of manure spreaders bought this year, 30.
Number of farmers using phosphate as reinforcement, 2,262.
Number of tons (estimated) being saved in 18 counties of the
State, 1,765,225.

Silos.—
Number built this year, 39.
Number built by advice of agents, 27.
Number in State, 292.
Number of tile, 32; cement, 111; stave, 140; others, 7; stone, 2.

Farm and Farmstead Improvements.—
Work done with the advice and help of agents and other ex-
tension workers.
Number of buildings erected, 578.
Number of buildings improved, 280.
Number of building plans furnished, 207.
Number of buildings painted or whitewashed, 314.
Number of home water systems installed this year, 473.
Number of home water systems in State now, 4,522.
Number of home lighting systems installed this year, 869.
Number of home lighting systems in state now, 4,378.
Number of grounds improved, 846.
Number of home sanitary conditions improved, 1,107.
Number of homes screened, 1,109.
Number of privies erected, 298.
Number of telephone systems installed, 27.
Number of farmers induced to adopt crop rotation, 1,674.
Total acreage of such rotations, 51,668.
Number of new pastures established, 409; acres, 8,102.
Number of old pastures renovated, 229; acres, 4,727.
Number of drainage systems installed, 29.
Number of farmers induced to drain all or part of farm, 216.
Number of acres drained, by tile, 1000, by ditches, 4,944.
Number of farmers induced to remove stumps, 560; acreage, 6,237.
Number of farmers induced to terrace land, 494; acreage, 13,945.
Number of home gardens planted, 1,922.
Number of farmers induced to attend short courses, 127.
Number of boys induced to attend schools or colleges, 225.
Number of visits by specialists to agents, 1,093.
Number of county fairs held, 23.
Number of demonstrators, co-operators and club members having exhibits, 680; number who won prizes, 517.
Number of demonstrators in truck farming, 165.
Number of farmers keeping costs records; complete, 127; partially 637.
Number farmers practicing fall plowing as result of agents' work, 8,861.
Number of farmers selecting seed, 5,399.
Number of farmers growing improved seed for sale, 875.
Number of wood-lots improved by suggestions, 76.
Number of farmers induced to grow sorghum or sugar cane for syrup, 4,114.
Number of farmers induced to keep bees, 143.
Number of farmers induced to save surplus products, 2,381.
Number of road improvements, demonstrations assisted in, 21.
Number of miles resulting therefrom, 157.
Number of farmers planting cover crops to be turned under 8,093.
Number of new implements and tools bought; binders, 84; hay presses, 66; gas engines, 202; 2-horse cultivators, 469; tractors, 524; motor trucks, 345; corn planters, 493; mowers, 260; grain drills, 186; disk harrows, 530; 1-horse cultivators, 867; plows, 2,087; hay loaders, 29; hay-rakes, 194; silage cutters, 18; cream separators, 48; spraying machines, 214; manure spreaders, 32; small tools, 4,156; peanut-pickers, 59.

Lime.—
Number of farmers using by agents' advice, 347.
Number of tons used; burnt lime, 1,833; limestone or its equivalent, 4,449.
Number of farms in which soil was tested for acidity, 624.
Miscellaneous Extension Work.—

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of visits by agents to demonstrators</td>
<td>12,526</td>
</tr>
<tr>
<td>Number of visits by agents to co-operators</td>
<td>12,720</td>
</tr>
<tr>
<td>Number of visits by agents to other farmers</td>
<td>12,911</td>
</tr>
<tr>
<td>Number of visits by agents to business men</td>
<td>3,613</td>
</tr>
<tr>
<td>Number of visits by agents to boys and girls clubs</td>
<td>3,394</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>45,164</strong></td>
</tr>
<tr>
<td>Number of miles traveled, (railroad)</td>
<td>26,604</td>
</tr>
<tr>
<td>Number of miles traveled (team)</td>
<td>514</td>
</tr>
<tr>
<td>Number of miles traveled (automobile)</td>
<td>306,001</td>
</tr>
<tr>
<td>Number of miles traveled (otherwise)</td>
<td>676</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>333,795</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of calls on agent at office or home (personal)</td>
<td>28,108</td>
</tr>
<tr>
<td>Number of calls on agent at office or home (telephone)</td>
<td>12,174</td>
</tr>
<tr>
<td>Number of farmers’ meetings held by agents or Extension Service</td>
<td></td>
</tr>
<tr>
<td>Number of farmers’ meetings held by agents or Extension Service</td>
<td>1,693</td>
</tr>
<tr>
<td>Number of farmers’ meetings addressed by agents</td>
<td>1,463</td>
</tr>
<tr>
<td>Number of field meetings held by agents</td>
<td>155,383</td>
</tr>
<tr>
<td>Number of field meetings held by agents</td>
<td>371</td>
</tr>
<tr>
<td>Attendance</td>
<td>18,091</td>
</tr>
<tr>
<td><strong>Total attendance at meetings</strong></td>
<td><strong>133,845</strong></td>
</tr>
<tr>
<td>Percentage of time spent in office</td>
<td>22</td>
</tr>
<tr>
<td>Percentage of time spent in field</td>
<td>78</td>
</tr>
<tr>
<td>Number of official letters written</td>
<td>31,951</td>
</tr>
<tr>
<td>Number of articles written for publication</td>
<td>1,438</td>
</tr>
<tr>
<td>Number of circular letters sent out</td>
<td>66,460</td>
</tr>
<tr>
<td>Number of U. S. Dept. of Agri. bulletins mailed</td>
<td>14,865</td>
</tr>
<tr>
<td>Number of Clemson College bulletins mailed</td>
<td>24,269</td>
</tr>
<tr>
<td>Number visits to schools</td>
<td>991</td>
</tr>
<tr>
<td>Number of assistance in school plans</td>
<td>72</td>
</tr>
<tr>
<td>Number of Extension short courses assisted in</td>
<td>43</td>
</tr>
<tr>
<td>Number of days spent in such schools</td>
<td>59</td>
</tr>
<tr>
<td>Total attendance at such schools</td>
<td>3,523</td>
</tr>
</tbody>
</table>

**Successful Undertakings by County Agents**

A list of successful undertakings of some of the county agents during the year 1920 follows:

**Aiken: E. D. Kyzer, County Agent.—**

(2) Increase of cotton warehouses from 3,000 bales capacity to 9,500 bales capacity (co-operating with State Warehouse Commissioner and the Cotton Association.)
(3) Campaign on proper harvesting and stacking of peanuts.

Berkeley: L. L. McLendon, County Agent.—
(1) Started co-operative shipping of hogs in carlots.
(2) Fair Association organized and first fair held in co-operation with home demonstration agent.

Chester: H. K. Sanders, County Agent.—
(1) Five new cotton warehouses built this year.
(2) Advanced registry work started with Guernseys.

Colleton: F. W. Risher, County Agent.—
(1) Started co-operation in growing one variety of corn and one of sweet potatoes.
(2) A string of sweet potato curing houses built having a total capacity of 28,000 bushels.
(3) Established co-operative hog and cattle sales.

Darlington: A. H. Ward, County Agent.—
(1) A purebred cattle sale was held from which were added to the herds of the county 18 purebred Guernseys and resulted during the year in adding a total of 35 head to the herds of the county.
(2) Variety tests of cotton to run three years.
(3) Fertilizer tests with Trona potash.
(4) Several cars fencing and one car posts ordered for farmers.

Dillon: S. W. Epps, County Agent.—
(1) Built the first sweet potato curing house in the county (6,000 bushels capacity).
(2) Started the use of self-feeders for hogs on nine farms in the county. More to follow.
(3) Put on a successful county fair.

Fairfield: R. H. Lemmon, County Agent.—
(1) Six cotton warehouses built.
(2) Conducted 10-acre corn contest resulting in increasing the corn yield of the county.
(3) Put on special demonstrations in terracing with good results.

Jasper: O. P. Lightsey, County Agent.—
(1) The first county fair.
(2) Bank financing the purchase of 17 purebred Duroc pigs for Club members.
(3) The securing of the first three government planned potato curing houses for this county (total capacity 30,000 bushels.)
Kershaw: J.W. Sanders, County Agent.—
(1) A campaign for better marketing of cotton resulted in:
Two government cotton graders in the county, three com-
munity cotton warehouses, one large private warehouse,
and a number of small individual farmers' warehouses.
(2) Demonstrations in purebred hogs vs. scrubs.

Lexington J. W. Shealy, County Agent.—
(1) Secured seeding of a large crop of small grain.
(2) Secured reasonable acreage in clover and other winter
legumes.
(3) A successful cotton warehouse campaign.

Newberry: T. M. Mills, County Agent.—
(1) The organization of a farmers' co-operative association,
which handled fertilizers for its members at a great saving.
(2) Securing a cotton grader for Newberry County.
(3) A successful warehouse campaign resulted in the building
of seven commercial warehouses and five farm warehouses
(co-operating with Cotton Association and Commissioner of
Agriculture.)

Oconee: G. R. Briggs, County Agent.—
(1) Boys' club work started on sound basis and foundation
laid for county fair.
(2) Three communities co-operated to build three community
cotton storage warehouses having total capacity of 1,100
bales.

Pickens: T. A. Bowen, County Agent.—
(1) Cover crop work.
(2) Co-operative buying of fertilizers.

Richland: J. R. Clark, County Agent.—
(1) Standardization of varieties of cotton and corn by com-
munities started successfully.
(2) Improvement and increased production of livestock.
(3) Orchard work. Had put out 5,000 peach trees and 1,000
grape vines in sand hill section of county.

Spartanburg: E. Carnes, County Agent—7 Months.
(1) Secured building of three sweet potato curing houses.
(2) A farm implement demonstration attended by 1,000 people.
(3) A successful cover crop campaign resulted in having, sown
approximately 2000 acres of clover, vetch and rye.

Union: W. D. Wood, County Agent.—
(1) Warehouse campaign (with Warehouse Commissioner and
Cotton Association.)
(2) The seeding of clover, rye and vetch as cover crops.
(3) Community breeding of corn.
York: J. R. Blair, County Agent.—
(1) Called farmers together by communities and bought co-operatively 525 tons of fertilizers at a saving of $5600.00. Also caused a lot of home mixing to be done at a saving of $4.50 per ton.
(2) Agitated the need for a cotton grader for county which resulted in securing one.
(3) A successful cotton warehouse campaign resulting in having four new warehouses built (with Cotton Association and Warehouse Commissioner.)

Project No. 4. Home Demonstration.

The work of this project is conducted under the immediate supervision of Winthrop College. Under the Smith-Lever law, the Clemson Agricultural College is the State agency for the administration of all extension work in agriculture and home economics and the Director of Extension as joint representative of the United States Department of Agriculture and the Clemson Agricultural College is the one official held responsible by both institutions for the proper conduct of all lines of extension work. By special agreement between the Boards of Trustees of Clemson and Winthrop, the immediate supervision of home demonstration work is assigned to Winthrop College and 25 per cent of Federal and State Smith-Lever appropriations are set aside for home demonstration work under the supervision of Winthrop College. The recommending of home demonstration agents, the deciding of questions of policy and similar matters in connection with the home demonstration work are assigned to Winthrop College, the Director of Extension located at Clemson being held responsible for seeing that all extension funds are expended efficiently and in keeping with the terms of the Smith-Lever law.

Work in this project has been conducted satisfactorily along the usual lines, and in addition, a special effort and much study is being given to the matter of providing an income for the farm woman through the sale of farm produce such as butter, eggs, poultry, and other products peculiar to localities. Home demonstration work is conducted through women's organizations known as Home Demonstration Clubs. These Clubs have been affiliated, in many counties, into county councils and the county councils were recently brought together at Winthrop College into a state organization. A full report on this project has been published by Winthrop College and is therefore not included here.

Project No. 5. Negro Demonstration.

Six negro local agents have been employed in this project during this year to work with negro farmers only. The work of these agents is supervised directly by the President of the State College
Supplementary Reports

at Orangeburg. Demonstrations were conducted under the supervision of these local agents in much the same way as those conducted by the white agents. One hundred and fifty corn demonstrations are reported with an average yield of 38 bushels per acre; 125 cotton demonstrations with an average yield of 1,050 pounds of seed cotton per acre were supervised by the local agents. A great many demonstrations with oats, wheat, rye, forage crops, summer legumes, peanuts, sweet potatoes, orchard, dairy cattle, hogs, fertilizers and farm and home improvements were conducted among negro farmers in the state with the assistance of the local agents. Negro boys' corn and pig clubs were organized in six counties and a total of 250 boys and girls were enrolled.

The following are some statistics relative to the work of the six negro local agents:

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Figures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of visits made to demonstrators</td>
<td>1,974</td>
</tr>
<tr>
<td>Number of visits made to co-operators</td>
<td>9,451</td>
</tr>
<tr>
<td>Number of visits made to other farmers</td>
<td>1,001</td>
</tr>
<tr>
<td>Number of visits made to business men</td>
<td>395</td>
</tr>
<tr>
<td>Number of visits made to boys’ and girls’ clubs</td>
<td>395</td>
</tr>
<tr>
<td>Miles traveled by rail</td>
<td>2,355</td>
</tr>
<tr>
<td>Miles traveled by team</td>
<td>2,886</td>
</tr>
<tr>
<td>Miles traveled by automobile</td>
<td>14,098</td>
</tr>
<tr>
<td>Miles traveled otherwise</td>
<td>595</td>
</tr>
<tr>
<td>Number of calls at home or office relative to work</td>
<td>1,456</td>
</tr>
<tr>
<td>Number of farmers’ meetings held</td>
<td>124</td>
</tr>
<tr>
<td>Number of addresses made</td>
<td>225</td>
</tr>
<tr>
<td>Total attendance at meetings</td>
<td>21,500</td>
</tr>
<tr>
<td>Number of official letters written</td>
<td>1,948</td>
</tr>
<tr>
<td>Number of negro boys attending agricultural schools as a result of club work</td>
<td>53</td>
</tr>
</tbody>
</table>

It is believed that satisfactory progress is being made in this project.

Project No. 6. Live Stock

The work in Animal Husbandry for the year 1920-21 has been conducted along the following lines: purebred sires, forage crops, protein supplements to corn, purebred females, blue prints for buildings, judging, pig club work.

A total of approximately 35 purebred bulls and a large number of purebred boars have been placed in the State this year.

A large number of farmers have been induced to grow forage crops for their hogs. Bulletins and circulars have been distributed over the State relative to this subject.

In many instances farmers have been induced to feed protein supplements to corn. Such supplements as fish meal and tankage have been effectively used.
There have been approximately 90 head of purebred cows and 100 head of purebred sows placed in the State.

A large number of blue prints have been sent out to farmers to assist them in the construction of hog houses and barns.

Twelve or fifteen fairs have been attended by live stock judges from this Division and in each case they acted as judges for various classes of live stock.

Information has been sent out from this office giving members of pig clubs information as to feeding and management of their pigs. The specialists have also given direct assistance whenever possible.

Project No. 7. Dairy.

The most outstanding work done along this line has been in the organization and operation of co-operative bull associations. Results from this work are fundamental and tend to better the average quality of cattle throughout the state. Three new associations have been completed, making a total of 40 active associations now in the state. These associations own 76 purebred Jersey and Guernsey bulls of the best breeding and have a membership of 820 farmers owning over 3,000 cows that are being bred to these bulls. Work is under way at present on several new associations.

A remarkable exhibit was made at the Greenwood Fair last fall of 26 Jersey bulls belonging to co-operative bull associations in the Piedmont counties. This show attracted national interest to our work, especially in Jersey circles.

The testing of purebred cows for yearly milk and butter fat records has been encouraged through the organization of two testing associations, viz; the Pioneer and the Edisto. These two associations test from 120 to 150 cows each month. Very creditable and constantly improving records are being made. High producing cattle are being developed. This is gradually obviating the necessity of our going outside the state for improved cattle.

Our dairy specialists have been closely allied with the South Carolina Dairymen's Association in all its activities. This association held its annual meeting at Darlington this year and a dairy cattle show was staged in connection with the meeting.

Other lines of dairy work were conducted satisfactorily considering that our force has been short one man the whole year and for a part of the time we had new men at work.

Project No. 8. Agronomy

Three lines of work in agronomy have been emphasized, viz; seed improvement, soil building, and forage crops. The seed improvement work is resulting in the gradual elimination of inferior varieties of cotton and corn through the recommendation and de-
monstration of only a very few of the best varieties suited to each section.

The soil building work has consisted of lectures and field meetings setting forth the advantages of crop rotation and the proper use of fertilizers. The response by farmers to this line of work has been very gratifying. Soil building work is particularly timely at present for the reason that the agriculture of the state is undergoing some very radical changes due to the boll weevil and information relative to crop rotation for soil improvement is more acceptable than in ordinary times.

The forage crop work was started on April 15th and a number of demonstrations have been started in the lower part of the state with forage crops and pastures. While no direct results have yet been secured we consider that this work forms the foundation for a more profitable live stock industry, and is therefore exceedingly important.

Project No. 9, Horticulture.

"Orchard Week" was observed in each county and the county agent from the adjoining county loaned to assist with meetings and demonstrations. Specialists visited counties on regular schedule at the time orchard week was being observed in the particular county. Great interest was aroused in renovating old orchards and in putting out new ones. The scarcity and high prices of nursery stock prevented many from putting out new orchards and incidentally made the renovation of old orchards more popular.

"Orchard Clubs" have been organized and have employed well trained boys to prune and spray orchards of members using equipment purchased co-operatively. The boys have been trained for this work by the county agents and specialists. This plan is a practical way of following up the work of promoting home orchards.

Commercial orcharding has gained more ground this year than during previous years. The main crops of note and promise are peaches, grapes, pecans and dewberries.

Sweet potato curing houses increased over 100 percent during the year. People have been induced to plant one variety of potatoes. Reports have been received from 169 houses having a total of 300,000 bushels capacity and the maximum loss from rot was less than 5 per cent. The production of sweet potatoes in 1920 was 9,391,200 bushels on 88,300 acres with a value of $10,330,- 320.00. Other evidence of the growth of this industry is seen in the large increase in the number of plant growers, create manufacturers and the organization of the South Carolina Sweet Potato Association. A demonstration car known as the "South Carolina Sweet Potato Special" was operated with the assistance of the railroads, over the potato section of the state just prior to the harvest-
ing season. This car carried harvesting and grading implements, storage house plans and models and kinds of information about sweet potato. Nineteen counties were visited and the success of the campaign for better methods was outstanding.

Project No. 10. Poultry.

We have been unable to secure a poultry specialist during this year but have employed a qualified man to take up this work on August 1st, 1921.

Project No. 11. Marketing

Following a careful study in 1919 of methods of handling, packing, grading, marketing and transportation of farm products, special emphasis has been laid upon truck and produce organization work for the purpose of bringing about better grading, handling and marketing of all crops. Among the organizations that we have co-operated with are the South Carolina Sweet Potato Association, South Carolina Produce Exchange, South Carolina Tobacco Association, Carolina Melon & Produce Exchange, and Dixie Produce Exchange. Among the products that we have assisted in marketing are watermelons, cucumbers, Irish and sweet potatoes, snap beans, peanuts, hogs and cattle. While our assistance has been worth a considerable amount in the way of saving to growers our main efforts are to establish more efficient systems of marketing through which farm produce will reach the market in better condition and at less cost to the grower. Co-operation in marketing is being encouraged with a more promising outlook for the success of this method of marketing than we have had before.

Project No. 12. Entomology

Extension work in Entomology has been along two main lines, viz; beekeeping and the control of insect crop pests.

The beekeeping work has developed so rapidly that we have been unable to meet the calls for assistance. Demonstrations consist of requeening so as to improve the stock of bees; transferring to increase the size of the colonies; winter packing to insure large colonies early in the spring during the most profitable honey flows; putting in modern hives so as to increase the quantity of salable honey that may be secured; the harvesting preparation and marketing of honey and wax; disease control; and the rearing of queens and of bees for the market. The demonstrations are made in all sections of the state, certain bee yards in each section being used as centers for which information is diffused through demonstrations.

Demonstrations in control of crop pests have been principally with the cotton boll weevil and the army worm. The poisoning of
the boll weevil with calcium arsenate has received much attention and our efforts have been directed to giving out the best information available on the subject, and to preventing cotton growers making costly mistakes with the poison and the machines used in applying it. A series of demonstrations on boll weevil poisoning was arranged and conducted at about ten points in the southern part of the state during the latter half of August. The great difficulty has been to get the poison applied intelligently and according to directions. Very little reliable information on poisoning has been developed in the state for that reason, although reports from Louisiana, Georgia and Alabama are very promising.

Project No. 13. Plant Pathology

Extension work in plant diseases has been of an emergency character rather than the promotion of definite projects. The emergency work consist of identifying plant diseases in various parts of the State and recommending remedial measures.

Project No. 14. Boys' Club Work

Boys club work was organized in 36 counties out of 46 counties in the state in 1920. Five phases of the work were undertaken, viz; corn club, cotton club, peanut club, pig club and calf club. In addition to these, potato and cowpea clubs were organized by a few county agents. Corn clubs were organized in 25 counties with a total of 462 members. Cotton clubs were organized in 14 counties with a total of 73 members. Peanut clubs were organized in 13 counties with a total of 121 members. Pig clubs were organized in 30 counties with a total of 1,039 members. Calf clubs were organized with a total of 17 members. Miscellaneous clubs consisting of potato and cowpea clubs were organized in 6 counties with a total of 31 members, making a total membership, including all phases of club work, of 1,750.

The same kind of clubs were being conducted again in 1921 but with an increased membership and greater enthusiasm both on the part of the boys and the county agents.

Project No. 15. Rural Organization

The work of Mr. W. H. Mills has been principally along the line of developing co-operative business organizations among farmers. This has been done through addresses, articles giving information, preparation of plans and contracts for various organizations, and participation in conferences with officers and leaders of farmers’ organizations. In addition to these lines of work a tentative study of food and feed requirements by counties was made with a view of arriving at an agricultural policy for the farm, the county and the State. This study and policy is being further developed at
this time in co-operation with the various Divisions of the Agricultural Department of the College.

**Project No. 16. Cotton Grading and Marketing**

The personnel of this project was increased this year to twenty cotton graders compared with seven during the previous year. These men are paid principally from local funds appropriated by farmers, bankers and merchants and are supervised by the Extension Service and the United States Bureau of Markets. The cotton graders have been working under difficulties due to the low price of cotton and the consequent general dissatisfaction on the part of growers with everything having to do with the marketing of the staple. Notwithstanding this our graders have graded and classified a total of 122,731 bales during the fiscal year.

### FUNDS FOR EXTENSION SERVICE WORK FROM ALL SOURCES FISCAL YEAR ENDING JUNE, 30, 1921

1. State appropriation (State Smith-Lever) $81,070.00
2. Federal Appropriation (Federal Smith-Lever) 130,297.88
3. County funds 104,256.93
4. U. S. Department of Agriculture funds 40,300.00
5. Miscellaneous funds 47,000.00a

**TOTAL RESOURCES** $402,924.81b

*a Of the above total $40,000.00 consists of funds raised and disbursed by local farmers' associations with which the extension service was co-operating in maintaining cotton grading work. This fund practically discontinued on July 1, 1921.

*b Of the above total, $116,766.43 is expended for home demonstration work and work in cities under the general supervision of Winthrop and the immediate supervision of Miss Christine N. South.
## EXPERDIENCES BY PROJECTS.

<table>
<thead>
<tr>
<th>No.</th>
<th>Project</th>
<th>Total Expenditures</th>
<th>State S. Lever</th>
<th>Federal S. Lever</th>
<th>U. S. D. A funds</th>
<th>County funds</th>
<th>Misc. funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Administration</td>
<td>$28,823.20</td>
<td>$15,041.35</td>
<td>$12,381.85</td>
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<td>2</td>
<td>Printing and dis. of Publications</td>
<td>4,581.54</td>
<td>1,650.30</td>
<td>2,922.24</td>
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<td>3</td>
<td>County Agents</td>
<td>131,977.72</td>
<td>13,713.45</td>
<td>43,299.38</td>
<td>10,538.61</td>
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<td>4</td>
<td>Home Demonstration</td>
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<td>5</td>
<td>Negro Demonstration</td>
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<td>4,842.78</td>
<td>1,800.00</td>
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<td>6</td>
<td>Livestock</td>
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<td>4,779.81</td>
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<td>7</td>
<td>Dairy</td>
<td>8,935.34</td>
<td>5,567.05</td>
<td>3,301.29</td>
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<td>Agronomy</td>
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<td>Horticulture</td>
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<td>10</td>
<td>Poultry</td>
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<td>11</td>
<td>Marketing</td>
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<td>3,722.93</td>
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<tr>
<td>12</td>
<td>Entomology</td>
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<td>1,193.27</td>
<td>4,244.72</td>
<td>1,500.00</td>
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<tr>
<td>13</td>
<td>Botany and Plant Pathology</td>
<td>600.00</td>
<td></td>
<td></td>
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<tr>
<td>14</td>
<td>Boys’ Club Work</td>
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<td>3,899.51</td>
<td>1,200.00</td>
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<td>15</td>
<td>Rural Sociology</td>
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<td>16</td>
<td>Cotton Grading and Marketing</td>
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<td>1,171.98</td>
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<td></td>
<td>Unexpended balance</td>
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<td></td>
<td>Totals</td>
<td>$402,924.81</td>
<td>$81,070.00</td>
<td>$130,297.88</td>
<td>$40,300.00</td>
<td>$104,256.93</td>
<td>$47,000.00</td>
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## PERSONNEL. EXTENSION SERVICE.

### 1920-1921.

#### A. Administrative Officers.

<table>
<thead>
<tr>
<th>Title</th>
<th>Name</th>
<th>Extension Salary</th>
<th>State S. Lever</th>
<th>Federal S. Lever</th>
<th>U. S. D. A funds</th>
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</thead>
<tbody>
<tr>
<td>1. Director of Extension</td>
<td>W. W. Long</td>
<td>$4,250.00</td>
<td></td>
<td></td>
<td>$600.00</td>
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<tr>
<td>2. Asst. Director of Extension</td>
<td>D. W. Watkins</td>
<td>$3,650.00</td>
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<tr>
<td>3. District Agent</td>
<td>H. S. Johnson</td>
<td>3,000.00</td>
<td>2,400.00</td>
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<tr>
<td>4. District Agent</td>
<td>A. A. McKeown</td>
<td>2,750.00</td>
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<td></td>
<td>$2,150.00</td>
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<tr>
<td>5. District Agent</td>
<td>T. H. Young</td>
<td>2,750.00</td>
<td></td>
<td></td>
<td>2,150.00</td>
</tr>
<tr>
<td>6. Chief of Horticulture</td>
<td>C. C. Newman</td>
<td>1,375.00**</td>
<td></td>
<td></td>
<td>1,075.00**</td>
</tr>
<tr>
<td>7. Chief of Agronomy Div.</td>
<td>C. P. Blackwell</td>
<td>1,000.00*</td>
<td></td>
<td></td>
<td>1,000.00</td>
</tr>
<tr>
<td>8. Botany and Pathology</td>
<td>H. W. Barre</td>
<td>1,000.00*</td>
<td></td>
<td></td>
<td>1,000.00</td>
</tr>
<tr>
<td>9. Chief of Entomology</td>
<td>A. F. Conradi</td>
<td>600.00*</td>
<td></td>
<td></td>
<td>600.00</td>
</tr>
<tr>
<td>10. Chief of Dairy Div.</td>
<td>J. P. LaMaster</td>
<td>1,000.00*</td>
<td></td>
<td></td>
<td>1,000.00</td>
</tr>
<tr>
<td>11. Chief of Animal Hush.</td>
<td>L. V. Starkey</td>
<td>1,000.00*</td>
<td></td>
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<td>1,000.00</td>
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<tr>
<td>12. Agricultural Editor</td>
<td>A. B. Bryan</td>
<td>933.38*</td>
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<tr>
<td>13. Supervising Agent</td>
<td>L. L. Baker</td>
<td>2,250.00</td>
<td></td>
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<td>2,250.00</td>
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<tr>
<td>14. Rural Sociology</td>
<td>W. H. Mills</td>
<td>1,600.00*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Receive additional salary from College and Experiment Station.

** Half year—Jan. 1 to June 30.
B. Specialists.

W. J. Sheely, Beef Cattle Specialist.
J. B. Parker, Dairy Husbandman.
W. A. Rowell, Agent in Dairying.
N. E. Winters, Agronomist.
J. L. Carbery, Agronomist.
S. L. Jeffords, Forage Crop Specialist.
Geo. P. Hoffmann, Extension Horticulturist.
A. E. Schilletter, Extension Horticulturist
F. L. Harkey, Field Agent in Marketing.
L. H. Lewis, Agent in Marketing.
G. M. Anderson, Extension Entomologist.
E. S. Prevost, Bee-Keeper Specialist.
B. O. Williams, Assistant Supervising Agent Boys’ Club Work.
E. G. Parker, Cotton Expert.

C. County Agents.

<table>
<thead>
<tr>
<th>Name</th>
<th>County</th>
<th>Name</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>L. B. Altman</td>
<td>Greenwood</td>
<td>R. H. Lemmon</td>
<td>Fairfield</td>
</tr>
<tr>
<td>C. L. Baxter</td>
<td>Beaufort</td>
<td></td>
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<tr>
<td>T. A. Bowen</td>
<td>Pickens</td>
<td>C. E. Littlejohn</td>
<td>Jasper</td>
</tr>
<tr>
<td>H. G. Boylston</td>
<td>Barnwell</td>
<td>J. W. McLendon</td>
<td>Florence</td>
</tr>
<tr>
<td>G. R. Briggs</td>
<td>Geocene</td>
<td>L. L. McLendon</td>
<td>Berkeley</td>
</tr>
<tr>
<td>J. D. Brandon</td>
<td>Bamberg</td>
<td>Colin McLaurin</td>
<td>Marion</td>
</tr>
<tr>
<td>T. B. Brandon</td>
<td>Dorchester</td>
<td>T. M. Mills</td>
<td>Newberry</td>
</tr>
<tr>
<td>S. M. Byars</td>
<td>Hampton</td>
<td>J. E. Trevathan</td>
<td>Laurens</td>
</tr>
<tr>
<td>J. R. Blair</td>
<td>Anderson</td>
<td>W. R. Gray</td>
<td>Clarendon</td>
</tr>
<tr>
<td>A. H. Chapman</td>
<td>Greenville</td>
<td>J. F. Quinerly</td>
<td>Lee</td>
</tr>
<tr>
<td>Ernest Carnes</td>
<td>Spartanburg</td>
<td>S. F. Reid</td>
<td>Calhoun</td>
</tr>
<tr>
<td>A. B. Carville</td>
<td>Edgefield</td>
<td>H. M. Kinsey</td>
<td>Colleton</td>
</tr>
<tr>
<td>M. M. McCord</td>
<td>Georgetown</td>
<td>Z. D. Robertson</td>
<td>Allendale</td>
</tr>
<tr>
<td>J. R. Clark</td>
<td>Richland</td>
<td>H. K. Sanders</td>
<td>Chester</td>
</tr>
<tr>
<td>W. O. Davis</td>
<td>Horry</td>
<td>J. W. Sanders</td>
<td>Kershaw</td>
</tr>
<tr>
<td>J. M. Eleazer</td>
<td>Saluda</td>
<td>J. W. Shealy</td>
<td>Lexington</td>
</tr>
<tr>
<td>S. W. Epps</td>
<td>Dillon</td>
<td>S. C. Stribling</td>
<td>Cherokee</td>
</tr>
<tr>
<td>S. E. Evans</td>
<td>Marlboro</td>
<td>W. J. Tiller</td>
<td>Chesterfield</td>
</tr>
<tr>
<td>E. H. Garrison, Jr.</td>
<td>McCormick</td>
<td>A. H. Ward</td>
<td>Darlington</td>
</tr>
<tr>
<td>W. F. Howell</td>
<td>Lancaster</td>
<td>W. D. Wood</td>
<td>Union</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J. F. Williams</td>
<td>Sumter</td>
</tr>
<tr>
<td>L. S. Wolfe</td>
<td>Orangeburg</td>
<td>L. C. Madison</td>
<td>Williamsburg</td>
</tr>
</tbody>
</table>

D. Clerks and Stenographers.

Mrs. H. S. Torrence, Librarian*
S. W. Evans, Treasurer*
E. B. Elmore, Bookkeeper*
C. M. Hall, Accountant
M. W. Cromartie, Chief Clerk
Leila Hart, Stenographer
Louise Burgess, Stenographer
Lucile Rochester, Stenographer

Harriett V. Moore, Stenographer
Sara Witherspoon, Stenographer
Susie H. George, Stenographer*
Julia Hook, Mailing Clerk*
Rosa Morrison, Stenographer
Sally Corbett, Stenographer*
Mrs. E. E. Bellenger, Stenographer

* These parties gave only part of their time to Extension duties.
E. Home Demonstration Agents.

This list of agents not shown for the reason they are working under immediate supervision of Winthrop College and names will appear in the report of Winthrop College.

Respectfully submitted,

W. W. Long.

Nov. 1, 1921.

Director Extension Service.
Report of The Fertilizer Board

President W. M. Riggs,

Clemson College, S. C.

Dear Sir:—

I respectively submit the following report of the work of the Fertilizer Department for the fiscal year ending June the 30th 1921.

The tonnage of fertilizer sold in this State, as shown by the sales of tags, is 616,280 tons, which is 50.85 per cent of last years sales, and the lowest in this State for 15 years except in 1915,—first year after our entrance into the war.

The high prices at which fertilizers were held and the low prices offered for cotton thus holding up sales, delayed opening of the season even for this diminished amount until after March the first. The prevalent financial conditions forcing such further reductions in prices resulted in reduced acreage in cotton and tobacco, which contributed to this result. The mixtures sold were largely of cotton seed meal and acid phosphate; so while the tonnage was about half of last year, it is believed the cost to consumers will not exceed one-third of last year. Now with infestation by boll weevils of the entire State completed, our farmers are dismayed by the spoilation this year of their chief money crop (cotton), they are planning its largely reduced acreage and a rigid economy in the production of other crops. So the indications now are that the use of commercial fertilizers next year will not exceed that of this year.

ANALYSIS AND INSPECTION.

While the revenue derived from the sale of tags has been cut in half, unfortunately the cost of materials and supplies for inspection and analysis has been but little reduced. With the reduced tonnage above reported only about half the number of official samples were collected, and less than one-fourth the number of farmers samples were sent in for analysis. Eleven inspectors were engaged at the same salary per month of last year, and entered loyally upon their work on February the 28th. With the reduced volume of business, but few violations of law were found and reported and a very small per centage of the samples analyzed were found below their guarantee. These analyses were compiled in our general
Bulletin No. 208, which is now ready for distribution to all requesting it.

For the purpose of comparison, with last year's work the following exhibit is submitted as will more fully appear in Dr. Brackett's detailed report.

<table>
<thead>
<tr>
<th></th>
<th>1920-21</th>
<th>1919-1920</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertilizers other than meal sold</td>
<td>526,416</td>
<td>1,183,878 Tons</td>
</tr>
<tr>
<td>Cotton seed meal sold</td>
<td>89,864</td>
<td>69,912</td>
</tr>
<tr>
<td>Number official samples analyzed</td>
<td>763</td>
<td>1,658</td>
</tr>
<tr>
<td>Number farmers samples analyzed</td>
<td>36</td>
<td>128</td>
</tr>
<tr>
<td>Number samples deficient 3% or more</td>
<td>42</td>
<td>144</td>
</tr>
</tbody>
</table>

A detailed statement of the expenses of this Department will appear in the Treasurer's itemized report, to which I respectfully refer.

Respectfully submitted,

H. M. STACKHOUSE.

Secretary.
Report of The Chief Chemist

ANNUAL REPORT OF ANALYTICAL WORK OF DEPARTMENT OF CHEMISTRY.

For Fiscal Year 1920-21

To President W. M. Riggs,

Clemson College, S. C.,

Dear Sir:

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<table>
<thead>
<tr>
<th></th>
<th>1919-1920</th>
<th>1920-1921</th>
</tr>
</thead>
<tbody>
<tr>
<td>Official samples of fertilizers</td>
<td>1668</td>
<td>763</td>
</tr>
<tr>
<td>Farmers' samples of fertilizers</td>
<td>134</td>
<td>36</td>
</tr>
<tr>
<td>Waters</td>
<td>45</td>
<td>61</td>
</tr>
<tr>
<td>Ores, minerals, rocks, etc. for identification</td>
<td>25</td>
<td>47</td>
</tr>
<tr>
<td>Limestones, marls, and lime</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Assays for gold and silver</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Ashes (wood, etc.,)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>55</td>
<td>777</td>
</tr>
</tbody>
</table>

| Total                    | 1941      | 1691      |

The most striking facts shown in this summary are:—First, that the official samples of fertilizers collected by our inspectors have fallen off 905, or about 54.25 per cent., as compared with last season; second, that a little more than one-fourth as many farmers' samples of fertilizers have been received this season as were sent in for analysis last season; third, that there has been an increase of about 35.5 per cent. in the number of samples of water analysed this year as compared with last year; fourth, that the number of miscellaneous samples has increased to more than fourteen times the number listed last year, this being due, however, to work done for the Experiment Station, to wit, 754 oil determinations in cotton seed and peanuts.
Supplementary Reports

OFFICIAL FERTILIZER SAMPLES

CLASSIFICATION

<table>
<thead>
<tr>
<th>Class</th>
<th>1919-1920</th>
<th>1920-1921</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete fertilizers</td>
<td>1001</td>
<td>411</td>
</tr>
<tr>
<td>Special mixtures (phosphoric acid and ammonia)</td>
<td>234</td>
<td>94</td>
</tr>
<tr>
<td>Acid phosphates</td>
<td>81</td>
<td>79</td>
</tr>
<tr>
<td>Acid phosphates with potash</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Cottonseed meals</td>
<td>95</td>
<td>77</td>
</tr>
<tr>
<td>Nitrate of soda</td>
<td>41</td>
<td>44</td>
</tr>
<tr>
<td>American potash</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Foreign potash</td>
<td>75</td>
<td>41</td>
</tr>
<tr>
<td>Dried Blood</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Fish</td>
<td>43</td>
<td>3</td>
</tr>
<tr>
<td>Tankage</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Sulphate of ammonia</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>1668</strong></td>
<td><strong>763</strong></td>
</tr>
</tbody>
</table>

The six samples listed as miscellaneous in the column for 1920-1921 consisted of one sample each: “Venezuelan goat guano,” nitrate of soda and sulphate of ammonia mixture, “Duplex phosphate,” rape-caster meal; and two samples both of which were special mixtures of ammonia and potash. The first four samples are omitted from the discussion which follows.

DEFICIENT SAMPLES

Of the 759 samples considered in the discussion 95 fell below the commercial value based on guarantee, as follows:

- In available phosphoric acid ———— 25
- In ammonia ———— 23
- In potash ———— 21
- In available phosphoric acid and ammonia ———— 4
- In available phosphoric acid and potash ———— 7
- In ammonia and potash ———— 13
- In available phosphoric acid, ammonia and potash ———— 2
- **Total:** 95

Last season out of 1651 samples 327, or 19.81 per cent., were deficient in commercial value based on guarantee while this season the number so deficient is 95 out of 763, or 12.45 per cent.

The extent to which these 95 samples fell below the guaranteed analysis in per cent is as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>0.0-0.10</th>
<th>0.10-0.25</th>
<th>0.25-0.50</th>
<th>0.50-1</th>
<th>1 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>In available phosphoric acid</td>
<td>2</td>
<td>7</td>
<td>10</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>In ammonia</td>
<td>14</td>
<td>5</td>
<td>10</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>In potash</td>
<td>6</td>
<td>6</td>
<td>17</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>22</strong></td>
<td><strong>18</strong></td>
<td><strong>37</strong></td>
<td><strong>27</strong></td>
<td><strong>11</strong></td>
</tr>
</tbody>
</table>

While this is on the whole a rather better showing than last year, especially in ammonia, the deficiencies in available phosphoric
Report of The Chief Chemist

ANNUAL REPORT OF ANALYTICAL WORK OF DEPARTMENT OF CHEMISTRY.

For Fiscal Year 1920-21

To President W. M. Riggs,

Clemson College, S. C.,

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<tr>
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</tr>
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<td>777</td>
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</tbody>
</table>

1941 1691

The most striking facts shown in this summary are:—First, that the official samples of fertilizers collected by our inspectors have fallen off 905, or about 54.25 per cent., as compared with last season; second, that a little more than one-fourth as many farmers’ samples of fertilizers have been received this season as were sent in for analysis last season; third, that there has been an increase of about 35.5 per cent. in the number of samples of water analysed this year as compared with last year; fourth, that the number of miscellaneous samples has increased to more than fourteen times the number listed last year, this being due, however, to work done for the Experiment Station, to wit, 754 oil determinations in cotton seed and peanuts.
## OFFICIAL FERTILIZER SAMPLES

### CLASSIFICATION

<table>
<thead>
<tr>
<th>Classification</th>
<th>1919-1920</th>
<th>1920-1921</th>
</tr>
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<tbody>
<tr>
<td>Complete fertilizers</td>
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<tr>
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<td>284</td>
<td>94</td>
</tr>
<tr>
<td>Acid phosphates</td>
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<td>79</td>
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<td>Fish</td>
<td>43</td>
<td>3</td>
</tr>
<tr>
<td>Tankage</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Sulphate of ammonia</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td>1668</td>
<td>763</td>
</tr>
</tbody>
</table>

The six samples listed as miscellaneous in the column for 1920-1921 consisted of one sample each: "Venezuelan goat guano;" nitrate of soda and sulphate of ammonia mixture, "Duplex phosphate;" rape-caster meal; and two samples both of which were special mixtures of ammonia and potash. The first four samples are omitted from the discussion which follows.

### DEFICIENT SAMPLES

Of the 759 samples considered in the discussion 95 fell below the commercial value based on guarantee, as follows:

- In available phosphoric acid ________________ 25
- In ammonia ________________ 23
- In potash ________________ 21
- In available phosphoric acid and ammonia ________________ 4
- In available phosphoric acid and potash ________________ 7
- In ammonia and potash ________________ 13
- In available phosphoric acid, ammonia and potash ________________ 2
- ________________ 95

Last season out of 1651 samples 327, or 19.81 per cent., were deficient in commercial value based on guarantee while this season the number so deficient is 95 out of 763, or 12.45 per cent.

The extent to which these 95 samples fell below the guaranteed analysis in per cent is as follows:

- 0.0-0.10 0.10-0.25 0.25-0.50 0.50-1 1 and over
  - In available phosphoric acid ________________ 2 7 10 12 13 4
  - In ammonia ________________ 14 5 10 5 4
  - In potash ________________ 6 6 17 10 3
- ________________ 22 18 37 27 11

While this is on the whole a rather better showing than last year, especially in ammonia, the deficiencies in available phosphoric
acid and in potash are more numerous and more serious than they were last year.

Of the 95 samples which fell below guaranteed commercial value, 42 were deficient three per cent or more below that value, as follows:

| In available phosphoric acid | 7 |
| In ammonia                   | 11 |
| In potash                    | 10 |
| In available phosphoric acid and ammonia | 1 |
| In available phosphoric acid and potash | 5 |
| In ammonia and potash        | 6 |
| In available phosphoric acid, ammonia and potash | 2 |
|                             | 42 |

Last season out of 327 samples deficient in commercial value based on guarantee, 150, or 45.87 per cent were three per cent or more deficient, while this season out of 95 samples, 42, or 44.21 per cent were found three per cent or more deficient, a slight drop. When, however, the comparison is made with the total number of samples analyzed, there was this season a drop of over 61 per cent in the number of samples found three per cent or more deficient in commercial value, for, while last season out of 1651 samples 150 were found three per cent or over deficient or about nine per cent this season out of 763 samples only 42 were three per cent or over deficient, or 5.5 per cent.

The extent to which these 42 samples deficient three per cent or more in commercial value based on guarantee, fell below the guaranteed analysis in per cent is as follows:

<table>
<thead>
<tr>
<th>0.0-0.10</th>
<th>0.10-0.25</th>
<th>0.25-0.50</th>
<th>0.50-1</th>
<th>1 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>In available phosphoric acid</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>In ammonia</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>In potash</td>
<td>3</td>
<td>1</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

| 7 | 5 | 16 | 19 | 11 |

In addition to the 95 samples deficient in commercial value based on guarantee, there were 229 samples which were found below guaranteed analysis in one or more ingredients, the deficiency being made up, however, by an excess of other ingredients. They were deficient as follows:

| In available phosphoric acid | 79 |
| In ammonia                   | 22 |
| In potash                    | 116 |
| In available phosphoric acid and ammonia | 2 |
| In available phosphoric acid and potash | 9 |
| In ammonia and potash        | 1 |
|                             | 229 |

Last season out of 1651 samples, 519 were found deficient in one or more ingredients, but not deficient in commercial value based on guarantee, or 31.44 per cent, while this season the number so
deficient is 229 out of 763, or almost exactly 30 per cent, a slight decrease.

The extent to which these 229 samples fell below the guaranteed analysis in per cent is as follows:

<table>
<thead>
<tr>
<th></th>
<th>0.0-0.10</th>
<th>0.10-0.25</th>
<th>0.25-0.50</th>
<th>0.50-1.00</th>
<th>1 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>In available phosphoric acid</td>
<td>35</td>
<td>22</td>
<td>23</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>In ammonia</td>
<td>21</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>In potash</td>
<td>60</td>
<td>31</td>
<td>25</td>
<td>13</td>
<td>1</td>
</tr>
</tbody>
</table>

While there are fewer ammonia deficiencies, there is a decided increase in the number of samples deficient in available phosphoric acid and in potash, especially in potash, due perhaps to a shortage of potash at the time the mixed fertilizers were manufactured.

In connection with the subject of deficiencies, the results of some of the analyses this season as compared with last are interesting:

**Acid Phosphates**

<table>
<thead>
<tr>
<th></th>
<th>1919-1920</th>
<th>1920-1921</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaranteed 16 per cent.</td>
<td>76</td>
<td>79</td>
</tr>
<tr>
<td>Deficient 19 (25%)</td>
<td>19 (21.52%)</td>
<td>6 (7.59%)</td>
</tr>
</tbody>
</table>

This is a little better showing than last year. There were no acid phosphates received this season for analysis with less than 16 per cent. guarantee of available phosphoric acid.

**Acid Phosphates with Potash:**—Only six samples of goods of this class were received for analysis this season, as compared with fourteen samples last season. One of these samples was guaranteed 10-0-2, and was found deficient in potash though not deficient in commercial value. Last year there were two samples of the guarantee 10 0 2, of which one was up to guarantee and the other deficient in phosphoric acid but not three per cent. in commercial value. The other five samples this season were guaranteed 10-0-4:—two were deficient in potash, but not three per cent. in commercial value, while the other three were deficient in both phosphoric acid and potash, and three per cent. or more deficient in commercial value. Last season there were six of the guarantee 10-0-4—one up to guarantee; two not deficient in commercial value, but one of them deficient in potash and the other in available phosphoric acid; one deficient in available phosphoric acid and in commercial value, but not three per cent.; two deficient three per cent. in commercial value, one being deficient in potash and the other in both phosphoric acid and potash. The quality of these goods this season is not so good as last year.

In connection with the potash deficiencies, not only in acid phosphates with potash but also in mixed goods, the following summary for the last seventeen years may prove interesting. It is to be noted that none of the deficient samples here listed is deficient in commercial value.
This summary shows that of the samples deficient in one or more ingredients, but not deficient in commercial value, a very large percentage is deficient in potash only. This deficiency was especially large during the years 1909 to 1912, inclusive. There was a marked drop in the years 1913 and 1914, but in 1915 the percentage deficiency was the same as in 1905. The figures for 1916 are not very significant on account of the small number of samples on the market containing potash. The percentage deficiency in 1919 was considerably greater than it was in 1917 and 1918, and higher than it had been since 1915, but the deficiency this season approaches that of 1912 being 50.65 per cent. against 59.21 per cent., which is still the maximum record for potash deficiency.

Top Dressers:—We have analyzed fewer samples of goods of this class than last year, twenty-four samples against fifty-nine, and the percentage deficiency has been larger this season than last, though the number three per cent. or more deficient in commercial value have been less, as shown by the following figures:—Ten out of twenty-four, or 41.66 per cent., this year were found deficient in commercial value, while last year twenty-one out of fifty-nine, or 35.6 per cent. were so deficient. This season five, one half of the deficient samples, or 20.83 per cent. of the whole number of samples, were three per cent. or more deficient in commercial value, while last season fifteen out of twenty-one deficient samples, or 25.42 per cent. of the whole number (59) were so deficient.

One each of the following guarantees was analyzed this season with the results indicated, and a comparison with last year:—

1. 4-7 1/2-1, deficient in ammonia, but not three per cent. in commercial value last year one sample deficient in ammonia but not in commercial value; 4-7 1/2-2 1/2, deficient in ammonia, but not three per cent., last year six samples: one up to guarantee, two not deficient in commercial value, but one deficient in ammonia, the other in potash; one deficient in ammonia and potash, but not three per cent. in commercial value; two samples deficient in ammonia and potash and three per cent. in commercial value. One sample each this season 4-6-0, found up to guarantee, none last year; 7-8-2, deficient in ammonia but not three per cent. in commercial value, last year the
Supplementary Reports

same; 4-7½-3½, deficient in potash but not in commercial value, last year none; 5-7-0, deficient in ammonia but not in commercial value, last year none; 7-6-3, found up to guarantee, last year none of this guarantee.

Two samples each of the following guarantee:—4-9-2, both deficient in ammonia, but not three per cent. in commercial value; 0-9-3, one deficient in potash and not in commercial value, the other deficient in ammonia and potash, but not three per cent., last year nine:—five found up to guarantee; two not deficient in commercial value, but one of them deficient in ammonia and the other in potash; two samples three per cent. or more deficient in commercial value, and deficient in ammonia.

Three samples 2-7-0, all found up to guarantee. Last year sixteen samples:—nine found up to guarantee; three not deficient in commercial value, but two deficient in ammonia and one in phosphoric acid; one sample not three per cent. but deficient in ammonia; three samples three per cent. or more deficient in commercial value, and all deficient in ammonia. These goods are sold as "Palmetto Fish Tankage," though they contain nitrate of soda, and other ammoniates in addition to fish, and the name would seem to be somewhat misleading.

Four samples of the guarantee 7-8-3, of which three were found up to guarantee; one deficient in potash, but not in commercial value. Last year five samples:—two found up to guarantee; one deficient in ammonia, but not in commercial value; two samples deficient three per cent. or more in commercial value, one being deficient in ammonia, the other in ammonia and potash.

Six samples guaranteed 4-7½-0, none up to guarantee; two not deficient in commercial value, but one deficient in ammonia and the other in phosphoric acid; one not deficient three per cent., but deficient in ammonia; three deficient in ammonia, and three per cent. or more in commercial value. Last year thirteen samples of this guarantee were analyzed, of which five were found up to guarantee; one not deficient in commercial value, but in ammonia; one not three per cent. deficient in commercial value, but in ammonia; six samples three per cent. or more deficient in commercial value, and all deficient in ammonia.

### AVERAGES OF ANALYSES

<table>
<thead>
<tr>
<th></th>
<th>1919-1920 Found</th>
<th>1919-1920 Guaranteed</th>
<th>1920-1921 Found</th>
<th>1920-1921 Guaranteed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acid Phosphates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available phosphoric acid</td>
<td>16.47</td>
<td>15.88</td>
<td>16.53</td>
<td>16.00</td>
</tr>
<tr>
<td>Insoluble phosphoric acid</td>
<td>0.57</td>
<td></td>
<td>0.53</td>
<td></td>
</tr>
<tr>
<td>Total phosphoric acid</td>
<td>17.04</td>
<td></td>
<td>17.06</td>
<td></td>
</tr>
<tr>
<td><strong>Special Mixtures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Acid phosphates with Ammonia)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available phosphoric acid</td>
<td>8.52</td>
<td>7.94</td>
<td>8.50</td>
<td>8.10</td>
</tr>
<tr>
<td>Insoluble phosphoric acid</td>
<td>1.04</td>
<td></td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Total phosphoric acid</td>
<td>9.56</td>
<td>3.69</td>
<td>9.31</td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td>3.72</td>
<td>3.68</td>
<td>3.68</td>
<td>3.63</td>
</tr>
<tr>
<td><strong>Complete Fertilizers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available phosphoric acid</td>
<td>8.64</td>
<td>8.09</td>
<td>8.55</td>
<td>8.09</td>
</tr>
<tr>
<td>Insoluble phosphoric acid</td>
<td>0.80</td>
<td></td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Total phosphoric acid</td>
<td>9.44</td>
<td>3.06</td>
<td>9.36</td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td>3.27</td>
<td>3.28</td>
<td>3.28</td>
<td>3.07</td>
</tr>
<tr>
<td>Potash soluble in water</td>
<td>2.92</td>
<td>2.72</td>
<td>2.77</td>
<td>2.67</td>
</tr>
</tbody>
</table>
### Cottonseed meals
- Ammonia equivalent of nitrogen
  - 7.08
- Nitrates of Soda
  - Ammonia equivalent of nitrogen
  - 18.47
- American Potash
  - Potash soluble in water
  - 37.26
- Kainite
  - Potash soluble in water
  - 13.82
- Muriate of Potash
  - Potash soluble in water
  - 46.78
- Manure Salts
  - Potash soluble in water
  - 20.24
- Acid Phosphates with Potash
  - Available phosphoric acid
  - 9.82
  - Potash soluble in water
  - 3.10

A striking feature of this table is that American potash seems to have entirely disappeared from our markets. The average for last year represents only fourteen samples of American potash. The averages for the other potash salts listed represent the following number of samples:—kainite, this year thirty-seven, last year sixty-five; muriates of potash, this year three, last year four; manure salts, this year one, last year six. Last year we received fourteen acid phosphates with potash, and this year only six, on which the above averages are based.

The following table shows the averages of the analyses of fertilizers from the time the Board of Trustees of The Clemson Agricultural College of South Carolina took charge of the fertilizer inspection down to the present time, or from 1891 to 1921 inclusive.
### Grades

In the following table the number of acid phosphates, acid phosphates with potash, complete fertilizers, cottonseed meals, and special mixtures (acid phosphates with ammonia) of each grade, according to guarantee, is placed side by side with the number found on analysis to belong to that grade, fertilizers having commercial values equal to schedule grades being placed in these grades:

<table>
<thead>
<tr>
<th></th>
<th>High</th>
<th>Standard</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid phosphates (79)</td>
<td>79</td>
<td>79</td>
<td>0</td>
</tr>
<tr>
<td>Acid phosphates with potash (6)</td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Complete fertilizers (411)</td>
<td>294</td>
<td>364</td>
<td>199</td>
</tr>
<tr>
<td>Cotton seed meals (77)</td>
<td>0</td>
<td>2</td>
<td>77</td>
</tr>
<tr>
<td>Special mixtures (94)</td>
<td>45</td>
<td>68</td>
<td>38</td>
</tr>
<tr>
<td>Total (667)</td>
<td>428</td>
<td>517</td>
<td>225</td>
</tr>
</tbody>
</table>

These results are due to the following changes in grade ascertained by analysis:

<table>
<thead>
<tr>
<th></th>
<th>Low to High</th>
<th>Standard to High</th>
<th>High to Low</th>
<th>Standard to Low</th>
<th>No to Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid phosphates (79)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>79</td>
</tr>
<tr>
<td>Acid phosphates with potash (6)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Complete fertilizers (411)</td>
<td>2</td>
<td>2</td>
<td>69</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Cotton seed meals (77)</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Special mixtures (94)</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>Total (667)</td>
<td>2</td>
<td>8</td>
<td>95</td>
<td>1</td>
<td>835</td>
</tr>
</tbody>
</table>

This table shows that out of 667 samples, 553 were of the grade claimed, 105 were of a higher grade, and nine of a lower grade than that claimed for them. Last season out of 1465 samples, 1284 were of the grade claimed, 110 were of a higher grade, and 71 of a lower grade than that claimed for them. Expressed in percentages the figures for the season just before the outbreak of the Great War, and for the seven seasons since the war began are as follows:

<table>
<thead>
<tr>
<th>Season</th>
<th>Of Grade Claimed</th>
<th>Higher than Grade Claimed</th>
<th>Lower than Grade Claimed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1913-1914</td>
<td>88.42</td>
<td>9.99</td>
<td>1.57</td>
</tr>
<tr>
<td>1914-1915</td>
<td>85.95</td>
<td>6.37</td>
<td>7.67</td>
</tr>
<tr>
<td>1915-1916</td>
<td>82.04</td>
<td>13.50</td>
<td>4.45</td>
</tr>
<tr>
<td>1916-1917</td>
<td>88.57</td>
<td>8.62</td>
<td>2.80</td>
</tr>
<tr>
<td>1917-1918</td>
<td>87.75</td>
<td>9.66</td>
<td>2.51</td>
</tr>
<tr>
<td>1918-1919</td>
<td>84.08</td>
<td>11.06</td>
<td>4.85</td>
</tr>
<tr>
<td>1919-1920</td>
<td>87.65</td>
<td>7.51</td>
<td>4.85</td>
</tr>
<tr>
<td>1920-1921</td>
<td>82.90</td>
<td>15.74</td>
<td>1.35</td>
</tr>
</tbody>
</table>

This table shows that in the year previous to the Great War about 98 per cent. of the samples were of the grade claimed or higher, that in 1914-1915 there were about 92 per cent., in 1915-1916 about 95.50 per cent., in 1916-1917 and in 1917-1918 about 97 per cent., in 1918-1919 about 95 per cent., in 1919-1920 about 95.2 per cent., and in 1920-1921 about 98.6 per cent.

In order to compare the results of this season's grades with those of last season, the following summary is given:
### Supplementary Reports

<table>
<thead>
<tr>
<th>Acid phosphates</th>
<th>1919-1920</th>
<th>1920-1921</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Claimed</td>
<td>Above</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>Acid phosphates with potash</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Complete fertilizers</td>
<td>870</td>
<td>89</td>
</tr>
<tr>
<td>Cottonseed meals</td>
<td>82</td>
<td>1</td>
</tr>
<tr>
<td>Special mixtures</td>
<td>243</td>
<td>17</td>
</tr>
</tbody>
</table>

Attention has been called for the past five years in my annual reports to the number of Low Grade cottonseed meals on our markets.

For the sake of comparison, there are given in the following table the number of samples of cottonseed meal and the percentage of low grade meals from 1915-1916, when the number first became noticeable, to 1920-1921, inclusive:

<table>
<thead>
<tr>
<th>Season</th>
<th>Number of Samples</th>
<th>Low Grade Cottonseed Meals, Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1915-1916</td>
<td>245</td>
<td>16.73</td>
</tr>
<tr>
<td>1916-1917</td>
<td>192</td>
<td>9.90</td>
</tr>
<tr>
<td>1917-1918</td>
<td>255</td>
<td>4.31</td>
</tr>
<tr>
<td>1918-1919</td>
<td>199</td>
<td>10.50</td>
</tr>
<tr>
<td>1919-1920</td>
<td>94</td>
<td>11.70</td>
</tr>
<tr>
<td>1920-1921</td>
<td>77</td>
<td>3.90</td>
</tr>
</tbody>
</table>

The cotton seed meals this season were of much better quality than for any other year given in this table. They were freer from lint, and while all were claimed standard, two were found high grade, and only three below standard.

### NITROGEN

#### DEFICIENCIES, SOURCES, AVAILABILITY.

**Nitrogen Deficiencies:** In connection with the subject of deficiencies in nitrogen or equivalent ammonia, the following table is interesting. It is to be noted that none of the deficient samples listed is deficient in commercial value.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Samples</th>
<th>Deficient in one or more Ingredients</th>
<th>Deficient in Nitrogen only</th>
<th>Deficient in Nitrogen, Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1905</td>
<td>522</td>
<td>165</td>
<td>61</td>
<td>36.96</td>
</tr>
<tr>
<td>1906</td>
<td>655</td>
<td>201</td>
<td>87</td>
<td>43.28</td>
</tr>
<tr>
<td>1907</td>
<td>743</td>
<td>153</td>
<td>81</td>
<td>52.94</td>
</tr>
<tr>
<td>1908</td>
<td>713</td>
<td>161</td>
<td>77</td>
<td>47.82</td>
</tr>
<tr>
<td>1909</td>
<td>805</td>
<td>197</td>
<td>74</td>
<td>37.56</td>
</tr>
<tr>
<td>1910</td>
<td>1188</td>
<td>235</td>
<td>79</td>
<td>33.61</td>
</tr>
<tr>
<td>1911</td>
<td>1605</td>
<td>393</td>
<td>107</td>
<td>27.22</td>
</tr>
<tr>
<td>1912</td>
<td>1678</td>
<td>380</td>
<td>71</td>
<td>18.68</td>
</tr>
<tr>
<td>1913</td>
<td>1922</td>
<td>389</td>
<td>190</td>
<td>48.84</td>
</tr>
<tr>
<td>1914</td>
<td>2537</td>
<td>534</td>
<td>257</td>
<td>48.13</td>
</tr>
<tr>
<td>1915</td>
<td>1227</td>
<td>333</td>
<td>145</td>
<td>43.54</td>
</tr>
<tr>
<td>1916</td>
<td>1598</td>
<td>378</td>
<td>130</td>
<td>34.39</td>
</tr>
<tr>
<td>1917</td>
<td>1594</td>
<td>477</td>
<td>224</td>
<td>46.96</td>
</tr>
<tr>
<td>1918</td>
<td>1474</td>
<td>438</td>
<td>189</td>
<td>43.15</td>
</tr>
<tr>
<td>1919</td>
<td>1301</td>
<td>362</td>
<td>160</td>
<td>44.19</td>
</tr>
<tr>
<td>1920</td>
<td>1668</td>
<td>519</td>
<td>123</td>
<td>23.70</td>
</tr>
<tr>
<td>1921</td>
<td>763</td>
<td>229</td>
<td>22</td>
<td>9.61</td>
</tr>
</tbody>
</table>

The most striking feature of this table is the very small number of samples this season deficient in ammonia only, but not deficient in commercial value as compared with the years 1907 and 1908.
when the total number of samples was approximately the same as
this season and the samples deficient in ammonia only reached
nearly 53 and 48 per cent. respectively. It will also be noted that
the number of samples deficient in ammonia only is smaller than
at any time in seventeen years.

Nitrogen, sources and availability.—The new fertilizer law, effec-
tive July 1, 1920, requires that manufacturers of fertilizers guaran-
tee the per cent. of water-soluble ammonia equivalent of nitrogen
within such limits as the Board of Fertilizer Control may prescribe.
No limits were adopted for this season, in order to allow for the
accumulation of sufficient data on which to base fair and reasonable
limits. Limits have been adopted for next season, and the resolution
of the Board of Trustees, Board of Fertilizer Control, will be found
on page six of the fertilizer bulletin for 1921. This resolution
allows a variation of ten points on goods with a water-soluble
guaranteed up to and including $33\frac{1}{4}$ per cent., and of fifteen points
on goods guaranteed above that figure. For example goods guaran-
teed 25 per cent. water-soluble would be passed if found 15 per cent.
or 35 per cent.; and goods guaranteed 50 per cent. water-soluble
would be passed if found 35 per cent. or 65 per cent of the total
ammonia equivalent found.

As was the case last season, the results of this season’s determina-
tions of water-soluble ammonia equivalent of nitrogen indicate a
large use of highly water-soluble ammoniates, due in part probably
to a scarcity of organic ammoniates. Apparently much nitrate of
soda and sulphate of ammonia have been used. The following table
summarizes the results of the work for this season and last season,
and shows the number of samples falling within certain percentage
limits. and the percentage relation of these figures to the total
number of samples examined, this relation being shown in paren-
theses:—

<table>
<thead>
<tr>
<th>Per Cent. Water-Soluble Amonia</th>
<th>Number of Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>equivalent of Nitrogen.</td>
<td>1919-1920</td>
</tr>
<tr>
<td>Less than 10</td>
<td>None</td>
</tr>
<tr>
<td>10 to 20</td>
<td>3</td>
</tr>
<tr>
<td>20 to 30</td>
<td>10</td>
</tr>
<tr>
<td>30 to 40</td>
<td>10 (0.79 per cent)</td>
</tr>
<tr>
<td>40 to 50</td>
<td>29 (2.32 per cent)</td>
</tr>
<tr>
<td>50 to 60</td>
<td>98 (7.83 per cent)</td>
</tr>
<tr>
<td>60 to 70</td>
<td>275 (21.96 per cent)</td>
</tr>
<tr>
<td>70 to 80</td>
<td>448 (35.78 per cent)</td>
</tr>
<tr>
<td>80 to 90</td>
<td>264 (21.08 per cent)</td>
</tr>
<tr>
<td>90 to 100</td>
<td>115 (9.18 per cent)</td>
</tr>
</tbody>
</table>

| Total                         | 1252             | 502              |

While these figures speak for themselves it may not be out of
place to say that one would not expect to find an ammoniated
fertilizer containing less than ten per cent. of water-soluble ammonia
equivalent of nitrogen, since organic ammoniates will generally show
as much as ten per cent. We have found cottonseed meals with as
high as 16 per cent, that is nearly one per cent, out of a total of
six per cent.

There were 502 samples of ammoniated fertilizers examined for
water-soluble ammonia equivalent of nitrogen, of which only 138, or 27.49 per cent were guaranteed, according to the records in the office of the Secretary of Fertilizer Control. While this would seem to indicate the failure of the manufacturers of fertilizers to comply with the new fertilizer law, it may be due in part to goods having been made up before the new law went in to effect, in part to a lack of a clear understanding of the law, and in part to oversights of inspectors in noting guarantees of water-soluble ammonia equivalent of nitrogen.

Of the 502 samples above referred to, which were distributed between seventy-four companies or subsidiaries, 313 samples were distributed between sixteen companies or subsidiaries. In the following table are shown the number of samples credited to each of the sixteen companies, and the number of samples in which the water-soluble ammonia equivalent of nitrogen was guaranteed:

<table>
<thead>
<tr>
<th>Number of Samples</th>
<th>Number of Samples in which Water-Soluble Ammonia equivalent of Nitrogen Guaranteed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>21</td>
<td>9</td>
</tr>
<tr>
<td>27</td>
<td>14</td>
</tr>
<tr>
<td>29</td>
<td>9</td>
</tr>
<tr>
<td>32</td>
<td>8</td>
</tr>
<tr>
<td>34</td>
<td>9</td>
</tr>
<tr>
<td>36</td>
<td></td>
</tr>
<tr>
<td>313</td>
<td>80</td>
</tr>
</tbody>
</table>

In making up this table companies were selected with ten or more samples. It will be noted only two companies guaranteed about one-half the samples; two about one-fourth; four about one-third; five about one-sixth; one guaranteed one-fifth of the samples, and the remainder one sample each out of 13, and two samples out of 27. The totals show that only a little over one-fourth of the samples were guaranteed, about 25.55 per cent.

A rather surprising condition is revealed by a comparison of the guaranteed with the found water-soluble ammonia equivalent of nitrogen, as shown in the following digest of the results obtained on the 138 samples which were guaranteed, as indicated above:

26 samples guaranteed 25 per cent. water-soluble ammonia, found one 72½, one 78, eleven 81 to 89 per cent, and thirteen 90 to 96 per cent.

4 samples guaranteed 33 per cent. water-soluble ammonia, found 71½, 72, 81½, 82½.

42 samples guaranteed 33 ½ per cent. water-soluble ammonia, found one each. 27, 34½, 45, 92½; nine 50 to 60; six 60 to 70; twelve 70 to 80; eleven 80 to 90.

1 sample guaranteed 35 per cent. water-soluble ammonia, found 65½ per cent.
64 samples guaranteed 50 per cent. water-soluble ammonia, found one each 34, 35, 45 per cent.; three 50 to 60; six 60 to 70; twenty 70 to 80; twenty-seven 80 to 90; and five 90 to 98.

1 sample guaranteed 66 per cent. water-soluble ammonia, found 67 1/2 per cent.

These results would seem to indicate one of two things, either the manufacturers have not exercised sufficient care in analyzing their raw materials before making their water-soluble ammonia guarantees, or else they have assumed that organic ammoniates would show no water-soluble ammonia and based their guarantees entirely on the fact that the inorganic ammoniates, such as nitrate of soda, nitrate of potash and sulphate of ammonia, are 100 per cent. soluble in water.

In the future it will be our duty to make public the names of all manufacturers who fail to comply with the fertilizer law requiring the guarantee of water-soluble ammonia equivalent of nitrogen, and of all manufacturers whose guarantees do not fall within the limits prescribed by the Board of Fertilizer Control. As unsatisfactory as are the results this season, they show that the manufacturers can comply with the limits prescribed by the Board of Fertilizer Control, if they exercise reasonable care in making their guarantees, and that these limits are liberal.

The nitrogen availability standards for the coming season are the same as they have been for the last six years, and are as follows:—

"1st. The Modified Neutral Permanganate Method of Street is still in force.

"2nd. An unmixed fertilizer material furnishing organic nitrogen must show an availability of 85 per cent. of the total organic nitrogen found on analysis.

"3rd. The water-insoluble organic nitrogen in mixed fertilizers must show an availability of 75 per cent. by Street's method, if this water-insoluble organic nitrogen amounts to one-third or more of the total nitrogen found on analysis."

Five hundred and two mixed ammoniated fertilizers were examined for water-insoluble organic nitrogen, of which 100 samples were found to contain water-insoluble organic nitrogen amounting to one-third or more of the total nitrogen determined by analysis. All of these 100 samples were examined by Street's method and came up to the requirement of 75 per cent. availability. These results show that the organic ammoniates used by the manufacturers this season leave nothing to be desired as far as quality is concerned, at least in the samples which fell into our hands.

Farmers' Samples of Fertilizers:—In addition to the official fertilizer samples collected by inspectors, there have been analysed this season thirty-six samples for purchasers, as provided for in Section 17 of the new fertilizer law, effective July 1st., 1920.

Waters.—Of the sixty-one samples of water listed, ten were sanitary analyses of the Barracks Spring and ten of the stand-pipe water, regular monthly analyses of the college water supply; thirty-seven sanitary and three complete mineral analyses of waters sent in by citizens of our State; and one sample of water analysed for iron only.
Supplementary Reports

Ores, Minerals, etc.:—Forty-seven specimens were received and examined as compared with twenty-five last season. They consisted as usual very largely of iron pyrites, clays, micas, quartz, etc.

Limestones, Marl, and Lime:—Five samples of materials of this nature were analysed this season as compared with six last season.

Assays for Gold and Silver:—Two samples were assayed for gold and silver this season as compared with seven samples last season.

Ashes:—No samples of ashes were received for analysis this season, and only one sample last season, due no doubt to the abundance of foreign potash now on the market.

Miscellaneous:—These include 720 samples of cotton seed and thirty-four samples of pea nuts, in which the oil content was determined for the Experiment Station; eight were check analyses made for various laboratories; ten samples consisted of one each "mill cleanings," mud, soil, peat, clay for oil, supposed native oil, abattoir product, home mixture of humus and acid phosphate, efflorescence forming on the wall of the Agricultural Building, velvet bean meal; three toxicological analyses in cases of suspected poisoning of human beings.

Distribution of the Work:—The fertilizer analyses were made by Messrs. Robertson, Foy and Freeman, the samples prepared for analysis by Mr. L. J. Gunter.

Practically all of the miscellaneous work was performed by Mr. Freeman, except the three toxicological analyses, which were made by Mr. Robertson.

All of the nitrogen work, including, total, water-soluble and the availability determinations were made by Mr. Robertson.

All of the samples of water were analysed by Mr. Freeman, except four by Mr. Foy during Mr. Freeman's absence last August. Mr. Freeman also analysed the limestones, marls and lime and made the assays for gold and silver.

It gives me pleasure to be able to say that all the work has been faithfully and efficiently performed, and that complete harmony and the most hearty cooperation has prevailed throughout the year.

Respectfully submitted,

R. N. Brackett, Chief Chemist.

Clemson College, S. C., Aug. 9, 1921.
To The Crop Pest Commission,

Through President W. M. Riggs.

Gentlemen:—

We submit herewith the annual report of the work of the Crop Pest Commission for the fiscal year ending December 31, 1921.

Due to economic reaction, an increased number of people directed their attention to the growing of nursery stock, thus increasing the list of active nurseries in this state. A list of these nurseries follows.

Greenville Nursery Co., Greenville, S. C.
J. B. Taylor, Greer, S. C.
R. F. Watson, Greenville, S. C.
W. T. Adams, Greenville, S. C.
R. Bates, Jackson, S. C.
C. W. Fogle, Denmark, S. C.
Palmetto Nurseries, Florence, S. C.
Evergreen Nurseries, Conway, S. C.
M. O. Dantzler, Orangeburg, S. C.
Carolina Nursery Company Landrum, S. C.
North Nurseries, North, S. C.
S. E. Ellis, Level Land, S. C.
W. J. Wilson, Pontiac, S. C.

The greenhouse of the several floral companies of this state are inspected periodically, and certificates are issued when necessary. A list of the green houses inspected follows.

Laurens Street Greenhouse, Camden, S. C.
F. F. & F. L. Aichle, Charleston, S. C.
Mrs. J. M. Eison, Columbia, S. C.
Eau Claire Greenhouses, Columbia, S. C.
Chas. A. Moss, Spartanburg, S. C.
Miss Annie Addison, Greenville; S. C.
Mauldin Floral Co., Greenville, S. C.
Greenville Floral Co., Greenville, S. C.
Fants Greenhouse, Anderson, S. C.
The Wales Garden Greenhouse, Columbia, S. C.
Magnolia Floral Co., Charleston, S. C.
Hite Floral Co., Aiken, S. C.
Supplementary Reports

Rose Hill Greenhouse, Columbia, S. C.
Graceland Cemetery, Greenville, S. C.
Charleston Floral Company, Charleston, S. C.

The inspections of the nurseries in this state showed generally a very satisfactory condition. In the course of the year's inspections, mematodes were found in three, wooly aphis of apple in two, pecan scab in two, and San Jose Scale in one. Wherever infestation is discovered certificate of this Commission is withheld until the nursery and premises have been cleared. As a further protection it is required that each nurseryman be provided with a fumigating box, approved by the S. C. State Crop Pest Commission, and that all deciduous nursery stock is fumigated in accordance with the requirements.

All certificates issued by this Commission are consecutively numbered and each nurseryman or shipper to whom tags are issued is held accountable to this Commission for their use. Mutilated or unused permit tags are returned. It is required that duplicate invoices of all shipments moving into or within the state be furnished this Commission, showing the kind of stock, the amount, destinations, and also the numbers of the certificates under which shipments are made. These invoices are filed according to a classified system, and enables the inspector of this Commission to promptly determine the distribution of the output of any nursery shipping into or within this state. This is of especial importance whenever an infested shipment is intercepted, because it enables the inspectors to determine other points to which shipments have been made from the same source, and which points are possible or probable centers of infestation.

INTER STATE NURSERY QUARANTINE

Altho there has been a material increase in the number of nurseries in this state and the amount of stock grown, the principle movement of stock continues to be inter state, as is shown by the following list of nurseries arranged alphabetically according to states.

Alabama:—Carol Plantation, Theodore, Ala.
The Eagle Pecan Company, Pittsview, Ala.

Florida:—Commercial Nursery Company, Monticello.
Howard-Hickory Co., Monticello.
Harlan Farms Nursery, Paxton.
Interstate Nurseries, Jacksonville.
J. Van Lindley Nursery Co., Monticello.
W. B. Lamar, Monticello.
Monticello Nursery Co., Monticello.
Royal Palm Nurseries, Oneco.
E. E. Stokes, Campville.
Southern Nursery Co., Macclenny.
Simpson Nursery Co., Monticello.

Georgia:—Ashford Park Nurseries, Atlanta.
Born's Pecan Farm and Nursery, McRae.
Concord Nurseries, Concord.
The Cureton Nurseries, Austell.
Georgia Nursery Co., Concord
Hogansville Nurseries, Hogansville.
Hartwell Nurseries, Hartwell.
LaFayette Nurseries, LaFayette.
Magnolia Nursery, Cairo.
Pecan Grove Farms, Cairo.
Sigmund Tarnok & Co., Inc., Augusta.
Smith Brothers Nursery, Concord.
B. W. Stone Nursery, Thomasville.
Southern Nut Tree Nurseries, Thomasville.
Thomasville Nurseries, Thomasville.

Illinois:—The D. Hill Nursery Co., Dundee.
Vaughn's Seed Store, Western Springs.

Iowa:—Mt. Arbor Nurseries, Shenandoah.
Shenandoah Nurseries, Shenandoah.

Kentucky:—Willadean Nurseries, Sparta.

Massachusetts:—W. W. Edgar, Waverly.

Maryland:—Harrison's Nurseries, Berlin.
Loudon Nurseries, Irvington.
Franklin Davis Nurseries Co., Millikin.

Michigan:—R. M. Kellogg Co., Three Rivers.
Mississippi:—Bechtel Pecan Nurseries, Ocean Spring.
The I. E. Bass Pecan Co., Lumberton.

Nebraska:—Sonderregger Nurseries & Seed House, Beatrice.

New Jersey:—Henry A. Dreer, Riverton.

T. S. Hubbard Co., Fredonia.
John Lewis Childs, Floral Park.
Guaranty Nursery Co., Rochester.
First National Nurseries, Rochester.
Supplementary Reports

Glen Bros., Inc., Rochester.
Woodlawn Nurseries, Rochester.
L. W. Hall Co., Rochester.

North Carolina—Throneburg Nursery, Newton.
North State Nursery Co., Julian.
Catawba County Nursery, Newton.
Continental Plant Co., Kitterell.
Carolina Nurseries, Burlington.

Ohio:—The Storrs & Harrison Co., Painesville.

Andorra Nurseries, Chesnut Hill, Philadelphia.
Thomas B. Meehan Co., Dresher.
J. Franklin Meehan & Son, Mt. Airy.

Tennessee:—Howell Nurseries, Knoxville.
Forest Nursery Co., McMinnville.
Globe Nurseries, Bristol.
Farmers' National Nursery Co., Smithville.
Tennessee Nursery Co., Cleveland.

Bildad Nursery Co., Smithville.
Joe Shadow Nursery Co., Winchester.
Southern Nursery Co., Winchester.
Marble City Nursery Co., Knoxville.
Commercial Nursery Co., Decherd.
Winchester Nursery Co., Winchester.
J. C. Hale Nursery Co., Winchester.
Cedar Hill Nursery Co., Winchester.
Easterly Nursery Co., Cleveland.

Virginia:—Old Dominion Nurseries, Richmond.
Virginia Nurseries, Richmond.

West Virginia:—The Gold Nursery Co., Mason City.

While there has been great reduction in the amount of infested stock shipped into and within the state, the most unsatisfactory feature in nursery quarantine is the fact that it appears to be a common practice for nurserymen to make contracts for certain varieties of stock and when the order is filled other and frequently worthless varieties are substituted, and which is not discovered until the trees come into bearing. There is no provision in the South Carolina Crop Pest Act giving this Commission authority to deal with cases of this kind. This matter has been under discussion by entomologists and nurserymen for some years, and it is difficult
to determine some practical way for overcoming these mal practices. In some states this is best accomplished by the establishment of receiving stations located at strategic points throughout the states, and to which all stock is shipped for final inspection before it proceeds to destination.

PINK BOLL WORM. (Pectinophera gossypiella)

Due to the splendid efforts of the Federal Horticultural Board and cotton states co-operating, the pink boll worm has apparently been prevented from spreading the past year. This Commission continued its work begun several years ago in the closest possible co-operation with the Federal Horticultural Board, and consisted of enforcing quarantine regulations as well as in making systematic inspections of the several points within this state which had sometime during the past received cotton seed from pink boll worm infested areas. The quarantine regulations on account of pink boll worm have not been altered during the last year. In enforcing its regulations on account of the pink boll worm, this Commission is guided by the infested, quarantined and regulated areas as defined by the Secretary of Agriculture of the United States from time to time.

In co-operation with the Federal inspectors, the inspectors of this Commission are watching all shipments of a suspicious nature. Systematic inspection of the points which received some of the shipments confiscated by Villa in Mexico in 1914 to 1915, and which have been referred to more fully in previous reports, so far have given no evidence of pink boll worm infestation.

Examination of freight records after discovery of the Louisiana infestation by the Federal Horticultural Board, showed that between 1917 and 1920, materials from infested territories in Louisiana had been shipped to McColl, Jonesville, Arlington, Greer, and Greenville prior to the discovery of the Louisiana infestation. These points have been systematically inspected once every two weeks.

MEXICAN BEAN BEETLE (Ephilachna corrupta.)

The Mexican Bean Beetle referred to in our last report, spread with great rapidity during the past year and at the present time occurs in Alabama, Georgia, Tennessee, Kentucky and South Carolina. Due to the wide distribution of this pest and its wide range of food plants, it is believed by quarantine experts that the pest is no longer subject to control by quarantine. The Federal Horticultural Board raised its quarantine on account of the Mexican Bean Beetle effective July 23, 1921, while the quarantine of the South Carolina State Crop Pest Commission was raised October 1, 1921.
Tho this pest has been recorded from several points in Oconee and Pickens counties during the past summer, it has made practically no headway up to this time. We believe however, that this pest will spread rapidly, especially thru the Piedmont section of our state, and will be a pest of great importance in the economy of South Carolina agriculture. The importance of the legume family in southern agriculture cannot be overestimated, especially in South Carolina, which state is now in the transition period from farming under non boll weevil conditions to farming under weevil conditions.

EUROPEAN CORN BORER. (Pyrausta nubilalis)

Since our last report the European corn borer has spread over certain territory in Canada and has also entered the state of Ohio. The quarantine regulations adopted by this Commission and published in our last annual report, have not been altered. THE BROWN TAIL MOTH (Euproctis chrysorrhoea) and GYPSY MOTH (Porthetria dispar).

Altho these two pests have been in the United States for many years, their spread has been very slow, due to the control work and the quarantine work that has been in effect against them. The Federal Horticultural Board enforced a quarantine regarding all shipments coming from moth areas. In addition to certifying shipments before leaving moth areas, the Federal Horticultural Board notifies the quarantine officials of the various states to which such shipments are made and which enables state officers to have a complete record of such shipments and to make such examination as they desire.

FOREIGN SHIPMENTS.

The past year was noted for the return of the activities in foreign shipments which had completely discontinued during the last year of the world war. The modification of the Federal quarantine to the effect that foreign shipments are inspected at ports of entry is working satisfactorily, and has the advantage of facilitating the transportation of the various shipments and preventing loss at destination points, frequently unavoidable heretofore.

THE SWEET POTATO ROOT BORER (Cylas formacarius)

During the past year no material changes took place in the sweet potato root borer situation. The nearest point of its occurrence continues to be Charlton Co., Georgia. But to the fact that the main operation of sweet potato movements is inter state and that the predominating portion of the amount of sweet potato slips for planting purposes originates in Georgia and Florida, it is very
necessary that the greatest care be exercised, due to the occurrence of the sweet potato root borer in these states.

Due to the increase and importance of the sweet potato crop in South Carolina agriculture under boil weevil conditions, the introduction of sweet potato root borer into this state would be a great calamity. This insect does its chief damage in the grub stage when it tunnels thru the tubers, making them unfit for use. A list of shippers of sweet potato tubers and seedling plants follows:

Florida:—H. J. Bond, Tallahassee.

R. L. Brinson, Ureka.
T. D. Carson, Orlando.
S. M. Carnes & Son, Florahome.
Dr. R. A. Caswell, Alachua.
J. R. Davis Farms, Bartow.
Dixie Lumber & Veneer Co., Taft.
H. J. Custead, Mannville.
J. E. Fugate, Alchua.
Florahome Plant & Seed Co., Florahome.
The Gordon Plant Co., Hilliard.
H. J. Green, Live Oak.
Havana Plant Farm, Midway.
Hawthorne Plant Farm, Fort Green & Nocatee.
Guy M. Jolly, Hawthorne.
J. E. Kirby, Brooker, Route 2.
J. M. Kite, Hague.
McEachern Bros., Fort Green Springs.
H. Lightfoot, Altoona.
J. F. Laurence, Waldo.
Mizell Evans, Live Oak.
The Maund Farm, Midway.
P. M. Morris, Jr., Wauchula.
W. Frank Malphus, Gainesville, R. &
G. D. Moore, Hawthorne.
Chas. W. Rogers, Live Oak.
J. W. Staff, Waldo.
Robert Thomas, Brooker.
D. S. Wilkinson, Brooker, R. 2.
Whitby Farm, Tallahassee.
C. W. Waughtel, Clarcona.
T. S. Williams, Starke.

Georgia:—H. S. Boatwright, Alma.
R. J. Brooks, Baxley.
Blakeley Farms, Blakely.
J. R. Batten, Hickox.
J. R. Brigman, Baxley.
Baxley Plant Co., Baxley.
Supplementary Reports

D. M. Barber, Baxley.
A. V. Brown, Douglas.
H. & R. Ballad, Pavo.
J. H. Crisp, Fender.
Clark Plant Co., Thomasville
J. B. Crane Plant Co., Dixie.
E. A. Cauthen, Fender.
R. B. Conder, Tifton.
Casper Hide & Skin Co., Fitzgerald.
Coleman Plant Co., Tifton.
Carlisle Seed & Plant Co., Valdosta.
J. R. Cauthen, Tifton.
N. F. Carden, Hatley.
Cordele Plant Co., Cordele.
E. E. Carter, Hazlehurst.
Dent & Flanders, Ocilla.
Dorris Plant Co., Valdosta.
H. H. Dean, Baxley.
J. A. Dasher Plant Co., Valdosta.
Z. C. Dismuke, Mystic.
The Davis Plant Co., Tifton.
Economy Plant Co., Tifton.
J. K. Exum, Milltown.
Mrs. Addie Evans, Graham.
Elton Plant Co., Lumber City.
Passet Plant Co., Baxley.
P. D. Fulwood, Tifton.
Farmers Co-op Plant Co., Fort Midge.
W. N. Gantt, Hazlehurst.
E. A. Godwin, Lenox.
Wm. C. Geraty Co., Tifton.
S. E. Hollis, Baxley.
B. J. Head, Alma.
J. E. Hunt, Seville.
O. L. Harris & Co., Cordele.
Thomas D. Henshaw, Piedmont College, Demorest.
Ingram & Co., Jesup.
G. N. Jones, Aashburn.
Jenkins Plant Co., Sumner.
The Jefferson Farms, Albany.
Jackson & Co., Alma.
J. E. King, Howell, R. 1.
Dr. E. A. Lambert, Denton.
W. W. Lindsey, Pavo.
J. R. McClellon, Rockingham.
Brooks County Plant & Truck Farm, Barnwick.
W. T. Mitchell, Folkston.
B. B. Medders, Rockingham.
Manson Plant Co., Valdosta.
Outlaw Plant Co., Hahira.
J. F. Owens, Valdosta, R. 2.
H. E. Parrish, Moultrie.
Parker Farms, Moultrie.
O. P. Parrish, Clyattville.
Powell Plant Co., Thomasville.
Pitts & Clemmons, Pavo.
Piedmont Plant Co., Albany.
Pavo Plant Co., Pavo.
T. N. Paris, Fitzgerald.
O. H. Pinson, Sylvester.
Webb's Stock & Plant Farm, Pavo.
J. D. Stewart, Quitman.
N. L. Willet Seed Co., Augusta.
H. D. Salter, Pitts.
Shipp Plant Co., Cordele.
F. F. Stokes, Fitzgerald.
Seminole Nurseries, Tifton.
Seaside Farms, Tifton.
South Georgia Plant Co., Alma.
R. A. Strange, Darian.
T. Pinson Stanley, Quitman.
Staunton Farms, Lenox.
Southern Nut Tree Nurseries, Thomasville.
R. B. Sumner, Tifton.
J. U. Sewell, Tifton.
Shoer Plant Co., Valdosta.
Sexton Plant Co., Valdosta.
Potato Curing & Storage Co., Helena.
Southern Plant Co., Tifton.
Ty Ty Produce & Plant Co., Ty Ty.
Tifton Potato Co., Tifton.
Thomasville Plant Co., Thomasville.
C. B. Varner, Ty Ty.
A. Winslow, Demorest.
J. O. Walker, Sycamore.
James Williams, Coffee.
H. L. Williams, Baxley.
D. M. White, Baxley.
T. W. Wrench, Folkston.
C. W. White, Hazlehurst.
C. W. Waughtel, Homeland.
BOLL WEEVIL (Anthonomus grandis.)

Due to the three comparatively mild winters and two moist summers, the cotton boll weevil developed practically unchecked by natural factors. This pest developed full strength over the southern part of the state as far north as a line running akimbo from Aiken to Horry counties. The insect had every thing in its favor, and had it developed full strength over the central and northern part of the state during the past season the losses in those sections would have been much greater. The weather conditions were extremely adverse to poisoning operations during 1921, and the result secured from these operations in the heavy weevil belt of this state were generally unsatisfactory. From the evidence at hand obtained thru experiments in other sections of the South, it would appear that the weather conditions was the determining factor in poisoning operation in 1921, and it is believed that weevil poisoning is profitable in this state when the work is properly done under favorable weather conditions on high yielding land. Should the winter of 1921-22 be comparatively mild with moisture conditions during the growing season, resembling those of the past year, then very severe boll weevil damage may be expected over a greater part of the state in 1922. It must be remembered that insects are "animals of the weather," and that this is very emphatically true in regard to the boll weevil. While a mild winter followed by a moist growing season would be very favorable to the pest and enable it to develop great destructiveness, yet a cold winter followed by a dry growing season would have the reverse effect and reduce the pest to a minimum.

ARGENTINE ANT (Iridomyrmex humilis.)

So far as we are able to determine, this pest has not spread beyond Charleston, but since our last annual report it has spread over more territory in and about the city of Charleston. Among American ants this is the most destructive species, on account of its cosmopolitan habits, its size, and social organization. This pest appears to be originally a grave infesting species, and it may be distributed from one place to another in shipments of dead bodies transported for burial. Efforts are now being made by another section of this division to launch a campaign aimed at eradication.

MOLE CRICKET (Scapteriscus Sp.)

The Porto Rican Mole Cricket, previously reported as having become destructive in the vicinity of Charleston, is spreading along the coast of South Carolina, and is also getting foothold at several points in the state.

This insect is being studied in co-operation with the Bureau of Entomology, with W. A. Thomas, of the Bureau of Entomology,
in charge. Mr. Thomas has his headquarters at Chadbourn, N. C.,
giving his attention to several serious pests along our coast.
While this pest would not be subject to quarantine measures, yet
experimental work aimed at its control is developing promisingly.

COTTONY CUSHION SCALE (Icerya purchasi.)

This pest has not spread beyond Charleston, and at this time is
well under control, due to the introduction of Australian Lady
Bird Beetles obtained from the State Plant Board of Florida, Gaines-
ville, Florida.

THE STRIPED PEACH WORM. (Gelechia confusella).

A specimen of the striped peach worm was sent to us for iden-
tification from Columbia, S. C. This was the only specimen ob-
served, and as it is not a new pest in the United States it is unlikely
that it will give us serious trouble.

VELVET BEAN CATERPILLAR (Anticarsia gemmatilas.)

This insect, which has already been destructive in the state of
Florida, is migrating northward, and it will only be a matter of
time when it will cross the Savannah River and enter the state of
South Carolina. As an enemy of the velvet bean this insect re-
quires the most serious consideration and great vigilance is practic-
ed by this Commission in the southern counties so that its first
appearance in the state may be quickly detected.

DISEASE OUTBREAKS

There have been no wide-spread out-breaks of new or
troublesome diseases in the state during the year. Some of the
diseases which occasionally appear as epidemics have developed and
caused serious losses in some sections of the state. During the
latter part of the summer, quite a serious outbreak of bean bacterial
blight and bean anthracnose developed in Berkeley County. Since
bean growing is a new industry in this section, and these
diseases have never occurred here before, it seems safe to assume
that they were brought in this case on the seed. The sources of
the seed are still being investigated and every effort being made
to prevent the introduction of diseased seed next year.

SWEET POTATO DISEASES.

The fungous diseases of sweet potatoes are still causing serious
losses in the sections where sweet potatoes are grown commercially.
The practices which have developed within recent years of buying
plants from growers, rather than the individual growers bedding
their own stock and producing plants to meet their needs, has re-
sulted in some of the diseases becoming rather wide-spread. In
order to protect the people who buy slips and plants, the Commission
has enforced regulations prohibiting the sale and shipment of sweet potato plants which are known to be diseased. During the past year, over ten thousand (10,000) bushels of potatoes have been inspected by the pathologists of the Commission, either in the potato houses or at bedding time. Large numbers of plant beds have been examined and where the potatoes and plants were found free from disease, permit tags have been issued to the growers. These tags must be attached to the packages of plants before they can be shipped by freight, express, or mail. This inspection service has already resulted in growers securing better plants, and in many cases where black rot and other sweet potato diseases have caused serious damage in the past, the fields have been comparatively free from disease this year. There are some diseases of sweet potatoes which have not yet appeared in South Carolina, and it is hoped by strict enforcement of these regulations to keep such diseases as “wilt” and “soil rot” from gaining a foothold in South Carolina.

COTTON DISEASES.

In order to prohibit the sale and distribution of cotton seed which are infected with anthracnose, wilt, or other communicable diseases, the Commission is continuing the policy adopted several years ago of preventing the sale and distribution of seed infected with these diseases. Inspections have been made in the field and laboratory tests have been made of various samples to determine whether or not the seed were diseased, and the usual number of tags have been issued to growers whose seed were free from disease.

CABBAGE AND TOMATO DISEASES.

The growing of cabbage and tomato plants for sale to gardeners and truckers has become quite a large business in this state and some of the adjoining states, and since such diseases as cabbage yellows, tomato wilt, tomato leaf blight, and black rot of cabbage, as well as other diseases are frequently carried into gardens and trucking areas on the plants, regulations have been formulated prohibiting the sale or shipment of cabbage and tomato plants unless they are known to be free from disease. Careful inspections are made of the plant beds where these plants are being grown commercially, and if the plants are found free from disease, permits are issued for their shipment.

The regulations adopted by this Commission governing the transpotation of cabbage plants are appended to this report.
DUTIES OF THE COMMISSION AS DEFINED BY THE LEGISLATURE.

The duties of this Commission as defined by the General Assembly of South Carolina, in the Crop Pest Act of 1912, are confined to the prevention of the introduction and the spread of injurious diseases and insects into and within this state. The obligations of the Commission are confined to matters relating to quarantine, and no authority is provided for dealing with violations of contracts that do not constitute a public nuisance or public danger. It appears that nurseries and other dealers in plants frequently substitute varieties other than those specified in the order. It furthermore appears that the furnishing of seedlings instead of grafted or budded stock is another mal practice. This Commission refuses to deal with such matters as these when requested to do so, as these duties were not intended in the provisions of the Crop Pest Act.

The introduction of a serious insect pest or plant disease may be expected to result in widespread infestation, and serious losses, thus constituting a public nuisance or public danger. Violations of contracts pertaining to seedlings, varieties or physical conditions of the trees affect the buyer and seller only, but do not constitute a public nuisance. Whenever it should become desirable that these matters be handled by this commission it will be necessary to provide further powers by the General Assembly.

Quarantine laws and regulations, have for a number of years been created and operated along well established and general lines of procedure. With few exceptions their effectiveness depended to a great extent at least on the educational and co-operative attitude of our citizens. The laws and regulations seem to contain perforations thru which the man with unscrupulous intentions can escape. This matter is further complicated, owing to the inability of the average individual to detect an infestation or to determine whether his plants are seedlings, while the varieties are generally not determined until bearing time. To secure redress after such a long lapse of time is fraught with difficulties, especially when the seller does not live within this state. It has been suggested that out of state sellers give power of attorney to acceptable citizens in the locality where the stock is sold and planted, and against whom proceedings may be instituted, in case of violations. The penalties or damages provided, unless sufficiently large, would not be an inducement for the offender to discontinue his mal practices.

Among the states where the most definite results are being secured in quarantine work are Florida and Mississippi. The Receiving Stations established in these states are outstanding features of their effective service and enables inspectors to see the stock before it proceeds to final distinction. The fact that such a progres-
Supplementary Reports

sive state as Mississippi found 16 per cent of the parcel-post ship-
ments that came into the state during the past year infested with
insects or diseases, shows not only the value of such service, but
may be regarded as an index of what may go by ordinary quaran-
tine service undetected.

It is furthermore recommended that the establishment of Receiv-
ing Stations be seriously considered in our next step, looking to-
ward the betterment of our service.

The work of this Commission has heretofore been prosecuted in
the closest co-operation with the Extension and Research Divisions
of this college. While each section has its own definite duties to
perform, this co-operation is of the greatest value, because it keeps
the various branches of the service well informed as to the current
and future needs of our people.

Respectfully submitted,

A. F. CONRADI,
State Entomologist.

H. W. BARRE,
State Pathologist.

SOUTH CAROLINA STATE CROP PEST COMMISSION
Clemson College, S. C.

REGULATIONS GOVERNING THE TRANSPORTATION OR MOVE-
MENT OF TOMATO PLANTS.

Reg. 1. H. The transportation into the within the state of South
Carolina of tomato plants for planting purposes is prohibited unless
such shipments are accompanied by a permit of the South Carolina
State Crop Pest Commission.

Reg. 2. H. These permits are issued after satisfactory evidence
has been obtained either through acceptable affidavit or a certifi-
cate issued by a competent inspector, stating that these plants and
the premises upon which they were grown were inspected by a com-
petent inspector and found to be apparently free from wilt and other
dangerous diseases and insects.

These regulations are effective on and after February 15, 1921.
SOUTH CAROLINA STATE CROP PEST COMMISSION

Clemson College, S. C.

REGULATIONS GOVERNING THE TRANSPORTATION OF CABBAGE PLANTS FOR PROPAGATING PURPOSES INTO AND WITHIN THE STATE OF SOUTH CAROLINA

Reg. 1. The transportation into and within the state of South Carolina of cabbage plants for planting purposes is prohibited unless accompanied by a permit of the South Carolina State Crop Pest Commission.

Reg. 2. These permits are issued after satisfactory evidence has been obtained either through acceptable affidavit or a certificate issued by a competent inspector, stating that these plants and the premises upon which they were grown were inspected by a competent inspector and found to be apparently free from wilt and other dangerous diseases and insects.

These regulations are effective on and after February 15, 1921.
To Live Stock Sanitary Board,

Through President W. M. Riggs,

Gentlemen:

I have the honor to submit herewith a report of the Clemson College Live Stock Sanitary Office and the Bureau of Animal Industry, U. S. Department of Agriculture, cooperating, in the State of South Carolina, covering the period from January 1, 1921, to October 31, 1921, inclusive.

While the functions of this office are generally understood, it may not be amiss to state that in addition to conducting Tick Eradication, Tuberculosis Eradication and Hog Cholera Control, we also investigate, treat and recommend measures for the control and eradication of all reported outbreaks of contagious, infectious and communicable diseases of live stock.

**TICK ERADICATION.**

Our work under this project is still confined principally to the counties in the coast region. In former reports we have referred to the adverse conditions encountered in the coast counties where the cattle are permitted to roam at will in the "free range areas" and it being a difficult matter, and in many instances impossible, to get all of the cattle disinfected regularly.

We had to conduct the work in the coast counties this year in the same manner as we have in the past, for we had the same unfavorable conditions to confront us, however, satisfactory progress was made.

In addition to the work in the coast counties, we also conducted "final" or "clean-up" work in the counties of Aiken, Clarendon, Edgefield, Fairfield, Florence, Kershaw and Richland. A few quarantined premises in these counties were inspected regularly, to be such they were absolutely free from ticks. The work will be practically completed in most of these counties this year.

We have referred in former reports to the great losses, both actual and potential, the farmers in our state have sustained each year on account of the cattle fever tick and the results that would be obtained when the tick was eradicated.
In this connection, as evidence of the results obtained, please permit me to remark upon the large and magnificent display of South Carolina raised cattle, both beef and dairy types, that those who were fortunate enough to attend our 1921 State Fair, had the pleasure of inspecting. The splendid specimens of the various breeds was in reality a revelation of the wonderful possibilities for cattle raising in our State, and should dispel for all time the doubt that has been entertained by some that “you can’t raise good cattle in South Carolina”; well, you can not unless you first eradicate the cattle tick. As the ticks go out, good cattle come in.

**TUBERCULOSIS ERADICATION.**

This branch of our work has been vigorously prosecuted during the past year with excellent results, and is being conducted not only to eradicate tuberculosis from the live stock of our State, but the establishment of Tuberculosis Free Accredited Herds.

The tuberculin test was applied during the past year to 804 herds containing 17,377 cattle, 253 of which reacted to the test and were disposed of in accordance with the State laws.

Since the work was inaugurated (November, 1917), the tuberculin test has been applied to a total of 1,579 herds containing 35,512 cattle, 632 of which reacted to the test.

We now have in the State 66 Accredited Herds containing 2,395 cattle; 463 herds containing 6,755 cattle that have passed one successful test and are in process of Accreditation; and a total of 580 herds, containing 10,957 cattle, under our supervision.

The eradication of tuberculosis from our live stock is of paramount importance not only from an economic but a public health standpoint as well. While the tuberculin testing of cattle is not compulsory, yet every breeder and every dairyman should feel that he is morally obligated to maintain a tuberculosis free herd, and this office will assist him in the fulfilling of this obligation so far as our means will permit.

That the importance of tuberculosis eradication is recognized, permit me to quote a resolution that was unanimously adopted by the South Carolina Live Stock Association at its annual meeting held in Columbia, S. C. on October 25, 1921:

**HOG CHOLERA CONTROL.**

Hog Cholera is the most common as well as the most fatal disease of hogs. While the disease is most prevalent in the eastern and southern counties, yet it is found in practically every county in the State during the past year.

The vaccination of hogs to protect them against cholera is now being done chiefly by veterinarians under the supervision of this office, and in order that their services may be readily available we
have our veterinarians stationed at the following points, viz: Allen-
dale, Blackville, Ridgeland, Walterboro, St. Matthews, Orangeburg,
Kingstree, Georgetown, Marion, Conway and Columbia

During the past year the veterinarians of this office, county
agents and laymen working under the supervision of this office,
have treated hogs against cholera, as follows:

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum alone</td>
<td>1,706</td>
</tr>
<tr>
<td>Serum and virus</td>
<td>42,054</td>
</tr>
<tr>
<td>Serum and bacterins</td>
<td>329</td>
</tr>
<tr>
<td>Serum, virus and bacterins</td>
<td>4,691</td>
</tr>
<tr>
<td>Bacterins alone</td>
<td>1,109</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>49,888</strong></td>
</tr>
</tbody>
</table>

INVESTIGATION OF OTHER DISEASES.

We answer numerous calls to all sections of the State to investi-
gate other diseases of live stock that appear to be contagious or
infectious. During the past year our veterinarians have investi-
gated the following diseases, some of which are not contagious or
infectious:

CATTLE

Hemorrhagic Septicemia, 36; blackleg, 10; botulism, 10; para-
sitism, 5; rabies, 4; infectious abortion, 4; actinomycosis, 1;
streptococic mastitis, 2; white scours, 1; sarcoma, 1; metritis, 5;
stomatitic, 4; parturient paresis, 2; poisoning, 4; pericarditis (trauma-
tic), 3; pneumonia, 1; malnutrition, 4; mammitis, 5; toxemia, 2;
dietetic, 27; gastro enteritis, 1; peritonitis, 1; injuries, 6; impac-
tion of rumen, 3; laminitis, 2; laryngitis, 2; bronchitis, 2; gastritis, 1.

SWINE

Cholera, 411; hemorrhagic septicemia, 27; mixed infection, 15;
pneumonia, 20; parasitism, 66; botulism, 10; rabies, 2; tubercu-
losis, 1; necrotic enteritis, 4; necrobacillosis, 3; dermatitis, 1;
peritonitis, 6; dietetic, 29; malnutrition, 13; infectious abortion,
4; rheumatism, 4; poisoning, 5; paralysis, 4; urticaria, 4; metritis, 1

HORSES AND MULES

Botulism, 5; pneumonia, 7; parasitism, 3; rabies, 1; azoturia, 1;
chronic coryza, 6; urticaria, 2; dietetic, 7; eczema, 1; lymphangi-
titis, 1; melanosis, 1.
SHEEP AND GOATS.

Parasitism, 3; malnutrition, 1; congestion of lungs, 1.

DOGS

Rabies, 4; black tongue, 4.
Our veterinarians are frequently consulted by the live stock owners in matters pertaining to the raising and handling of live stock and gladly render assistance in such cases. They also make voluntary visits to, and sanitary surveys of, farms where they suspect the live stock to be diseased, and keep in close touch with the development of the live stock industry in general. During the past year their activities in this connection are shown as follows:

- Consultations and interviews: 9,322
- Investigations on call: 3,114
- Sanitary surveys: 1,136
- Farms visited: 4,250

Valuable information pertaining to diseases and the care and handling of live stock is disseminated through the medium of bulletins, pamphlets, etc., from the Columbia office, also numerous inquiries concerning live stock diseases are answered by letter.

SERUM, VIRUS AND BIOLOGICS DISTRIBUTION

In order to better serve the interests of the live stock owners, the Clemson College Live Stock Sanitary Office maintains an equipment for carrying large stocks of Anti-Hog Cholera Serum, Virus and Biologics, and furnishes these products to the citizens of the State at cost, thereby effecting a saving to them of several thousands of dollars annually.

Our location is such that prompt deliveries can be made to any section of the State. During the past year this office has distributed Serum, Virus and Biologics, as follows:

<table>
<thead>
<tr>
<th>Product</th>
<th>Mills</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Hog Cholera Serum</td>
<td>2,930,275</td>
<td>$35,929.33</td>
</tr>
<tr>
<td>Hog Cholera Virus</td>
<td>128,185</td>
<td>1,591.04</td>
</tr>
<tr>
<td>*Biologics</td>
<td>29,467 (doses)</td>
<td>2,924.86</td>
</tr>
<tr>
<td>Syringes, etc.</td>
<td></td>
<td>280.52</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$40,725.75</strong></td>
</tr>
</tbody>
</table>

* The biologics distributed from this office are used for the prevention of hemorrhagic septicemia (cattle and swine), mixed infection (swine), and black leg (cattle).
DEPUTY STATE VETERINARIANS.

The demands made upon the Columbia office for veterinarians to investigate reported outbreaks of contagious and infectious diseases increased to such an extent during the past year we frequently did not have men to answer all calls promptly, and as it is our desire to protect the live stock industry of the state by rendering prompt service, plans were approved by the Board of Trustees of Clemson Agricultural College whereby the practicing veterinarians of the State were deputized so as to assist this office in the control and eradication of contagious and infectious diseases of live stock. As a result of this arrangement, twenty-six (26) practicing veterinarians were commissioned as Deputy State Veterinarians, effective July 1, 1921. These veterinarians are located principally in the upper and eastern sections of the State, and with the Assistant State Veterinarians being located in the southern and middle sections of the State, we now have a force of trained men located at advantageous points over the entire State and are in position to render prompt and efficient service.

COLUMBIA LABORATORY.

One of the most important developments in connection with our live stock sanitary work during this year was the establishment of our laboratory. We have long felt the need for this equipment, as we not infrequently meet with conditions that require either a bacteriological or pathological examination to properly diagnose the case. In the past we have had to send such specimens to laboratories located in the larger cities and it would be several days or weeks before we would receive a report of the examination. This was very unsatisfactory and in some instances meant a great loss to the live stock owners. Now we are in position to handle such cases in our Columbia laboratory in the shortest possible time.

We are very fortunate to have associated with us a veterinarian who has had special training and extensive experience in laboratory work and in addition to the work in the Columbia office we will conduct parasitic research work in various sections of the State, as we have found that practically all of our live stock are infested to a greater or less extent with various species of parasites that cause a great economic loss annually.

The Clemson College Live Stock Sanitary Office is now in position to render a service to the live stock industry of the State in keeping with its development and it is our desire to maintain this service to the highest degree of efficiency.
STATE WIDE STOCK LAW

In our Tick Eradication work during the past few years in the coast region, one of the greatest obstacles to the completion of the work was the prevailing custom of permitting live stock to run at large. This condition exists to a greater or less extent in all the coast counties; and it is impossible to get all of the cattle disinfected regularly, consequently an area freed of ticks one year would become reinfested, therefore, it has been necessary to continue dipping year after year with no great degree of progress or satisfaction. A remedy to this condition, however is now in sight. The State Wide Stock Law Act, as passed by the 1921 General Assembly, that becomes effective January 1st, 1922, is a most important piece of legislation, and with proper observance will not only be of great assistance to us in completing our tick eradication work and controlling the spread of hog-cholera infection, but it will be the means of controlling the breeding of our live stock and thereby enable us to improve the quality and raise a better class than at present, that will not only be more profitable but a pleasure as well.

And while the confining of live stock to one’s own premises may at first be an inconvenience to some, yet within a short time the improved conditions resulting therefrom will be so marked that those that are now not in favor of the State-Wide Stock Law will be, and would not revert to the old order under any circumstances.

TICK ERADICATION


<table>
<thead>
<tr>
<th></th>
<th>Salaries:</th>
<th>Incidental:</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 1921, to</td>
<td>$21,912.37</td>
<td>$8,847.19</td>
<td>$30,759.56</td>
</tr>
</tbody>
</table>

Salaries—Expenditures under this heading include salaries of supervising veterinarians, a clerk and cattle inspectors.

Incidentals—Expenditures under this heading include traveling expenses of supervising veterinarians, cattle inspectors and maintenance of office in Columbia, South Carolina.

TICK ERADICATION

State Expenditures

<table>
<thead>
<tr>
<th></th>
<th>Salaries:</th>
<th>Incidental:</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 1921, to</td>
<td>$15,644.68</td>
<td>$429.12</td>
<td>$16,073.80</td>
</tr>
</tbody>
</table>

Salaries—Expenditures under this heading include salaries of cattle inspectors and one clerk.
Incidentals—Expenditures under this heading include chemicals (for preparing arsenical solution to disinfect cattle), utensils and containers for same, printing regulations, quarantine and permit books, disinfection notices, etc.

The following statement shows expenditures from various sources from 1907 to October 31, 1921, inclusive:

### Expenditures for Tick Eradication in South Carolina.

<table>
<thead>
<tr>
<th>Year</th>
<th>U. S. Dept. of Agri.</th>
<th>Clemson College</th>
<th>State Appropr'n</th>
<th>County Appropr'n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1907</td>
<td>$5,125.00</td>
<td>$1,860.00</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>1908</td>
<td>15,207.00</td>
<td>4,535.00</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>1909</td>
<td>19,367.00</td>
<td>8,524.00</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>1910</td>
<td>15,915.00</td>
<td>9,960.00</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>1911</td>
<td>12,674.00</td>
<td>10,051.00</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>1912*</td>
<td>14,537.00</td>
<td>8,308.00</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>1913</td>
<td>16,146.00</td>
<td>9,369.00</td>
<td>$</td>
<td>1,083.00</td>
</tr>
<tr>
<td>1914</td>
<td>23,143.00</td>
<td>1,497.00</td>
<td>30,000.00</td>
<td>$</td>
</tr>
<tr>
<td>1915</td>
<td>35,479.84</td>
<td>$</td>
<td>30,000.00</td>
<td>$</td>
</tr>
<tr>
<td>1916</td>
<td>38,598.72</td>
<td>$</td>
<td>30,000.00</td>
<td>$</td>
</tr>
<tr>
<td>1917</td>
<td>64,811.65</td>
<td>$</td>
<td>30,000.00</td>
<td>$</td>
</tr>
<tr>
<td>1918</td>
<td>74,102.77</td>
<td>$</td>
<td>30,000.00</td>
<td>$</td>
</tr>
<tr>
<td>1919</td>
<td>63,947.29</td>
<td>$</td>
<td>20,000.00</td>
<td>$</td>
</tr>
<tr>
<td>1920</td>
<td>35,650.36</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>1921 (To Oct. 31)</td>
<td>30,759.56</td>
<td>16,073.80</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$465,464.19</strong></td>
<td><strong>54,104.00</strong></td>
<td><strong>$216,073.80</strong></td>
<td><strong>$1,083.00</strong></td>
</tr>
</tbody>
</table>

### LIVE STOCK SANITARY CONTROL WORK

#### U. S. Bureau of Animal Industry Expenditures.

<table>
<thead>
<tr>
<th>Year</th>
<th>Salaries:</th>
<th>Incidentals:</th>
<th>Total:</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 1921, to October 31, 1921, inclusive</td>
<td>$8,634.95</td>
<td>$3,269.02</td>
<td>$11,903.97</td>
</tr>
</tbody>
</table>

Salaries—Expenditures under this heading include salaries of four veterinarians and one clerk.

Incidentals—Expenditures under this heading include traveling expenses of veterinary inspectors, office rent, telephone charges, etc.

#### LIVE STOCK SANITARY CONTROL WORK

<table>
<thead>
<tr>
<th>Year</th>
<th>Salaries:</th>
<th>Incidentals:</th>
<th>Total:</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 1921, to October 31, 1921, inclusive</td>
<td>$27,479.37</td>
<td>$10,517.56</td>
<td>$37,996.93</td>
</tr>
</tbody>
</table>

Salaries—Expenditures under this heading include salaries of Veterinarians and Assistants to Veterinarians.
Incidentals—Expenditures under this heading include traveling expenses of veterinarians, office rent, etc.

LIVE STOCK SANITARY CONTROL WORK.

The following statement shows expenditures from the year 1918 to October 31, 1921, inclusive:

<table>
<thead>
<tr>
<th>Year</th>
<th>U. S. Dept. of Agri.</th>
<th>State Appropriation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1918</td>
<td>$ 3,243.81*</td>
<td>$ 1,879.44</td>
<td>$ 5,123.25</td>
</tr>
<tr>
<td>1919</td>
<td>7,418.80*</td>
<td>9,954.50</td>
<td>17,373.30</td>
</tr>
<tr>
<td>1920</td>
<td>13,325.56</td>
<td>30,000.00</td>
<td>43,325.56</td>
</tr>
<tr>
<td>1921 (To Oct. 31, inc.)</td>
<td>11,903.97</td>
<td>37,996.93</td>
<td>49,900.90</td>
</tr>
<tr>
<td>Total</td>
<td>$35,892.14</td>
<td>$79,830.87</td>
<td>$115,723.01</td>
</tr>
</tbody>
</table>

* These amounts do not include the United States Department of Agriculture’s expenditures in hog cholera work in South Carolina for the year 1918, or the first nine months in 1919, as this office has no record of the expenditures made by the United States Department of Agriculture for hog cholera control work in South Carolina prior to October 1, 1919.

FORCE IN LIVESTOCK SANITARY WORK

(Paid jointly by State of South Carolina and U. S. Dept. of Agriculture.)

<table>
<thead>
<tr>
<th>Title and Name</th>
<th>Total Salary</th>
<th>From S. C. Appropr’n</th>
<th>From Federal Appropr’n</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Veterinarian—W. K. Lewis</td>
<td>$3740.00 (year)</td>
<td>$1870.00</td>
<td>$1870.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—J. H. Rietz</td>
<td>3000.00</td>
<td>3000.00</td>
<td>3000.00</td>
</tr>
<tr>
<td>Veterinary Inspector—Z. C. Boyd</td>
<td>2100.00</td>
<td>2100.00</td>
<td>2100.00</td>
</tr>
<tr>
<td>Veterinary Inspector—P. J. Gallagher</td>
<td>2100.00</td>
<td>2100.00</td>
<td>2100.00</td>
</tr>
<tr>
<td>Veterinary Inspector—Clarke Hedley</td>
<td>2100.00</td>
<td>2100.00</td>
<td>2100.00</td>
</tr>
<tr>
<td>Veterinary Inspector—F. S. Hope</td>
<td>2100.00</td>
<td>2100.00</td>
<td>2100.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—M. L. Boyd</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—H. S. Brundage</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—E. T. Fisher</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—H. B. Hood</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—R. A. Mays</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—W. D. McCormack</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—E. W. McCrone</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—F. K. Peterson</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—M. T. Seay</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—S. D. Shoulkin</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—S. M. Witherspoon</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Asst. State Veterinarian—Emeln Wood</td>
<td>2000.00</td>
<td>2000.00</td>
<td>2000.00</td>
</tr>
<tr>
<td>Veterinary Inspector—L. S. Baer</td>
<td>1800.00</td>
<td>1800.00</td>
<td>1800.00</td>
</tr>
<tr>
<td>Veterinary Inspector—A. J. Wahn</td>
<td>1800.00</td>
<td>1800.00</td>
<td>1800.00</td>
</tr>
<tr>
<td>Veterinarian Inspector—J. R. Urih</td>
<td>1680.00</td>
<td>1680.00</td>
<td>1680.00</td>
</tr>
<tr>
<td>Clerk—George Smith</td>
<td>1680.00</td>
<td>1680.00</td>
<td>1680.00</td>
</tr>
<tr>
<td>Clerk—R. K. Donley</td>
<td>1680.00</td>
<td>1680.00</td>
<td>1680.00</td>
</tr>
</tbody>
</table>
Clerk (Steno-type)—Margaret Robertson 1200.00
Agent in Tick Erad.—S. H. Williams 1800.00
Agent in Tick Erad.—W. F. Gaillard 1740.00
Agent in Tick Erad.—V. E. McCormack 1620.00
Agent in Tick Erad.—J. D. Limehouse 1440.00
Agent in Tick Erad.—Wade H. Jones 1380.00
Agent in Tick Erad.—M. B. Marvin 1260.00
Agent in Tick Erad.—W. M. Barnwell 1080.00
Agent in Tick Erad.—C. S. Cuthbert 1080.00
Agent in Tick Erad.—J. E. Gillis 1080.00
Agent in Tick Erad.—W. H. Harrison 1080.00
Agent in Tick Erad.—A. A. Patterson, Jr. 1080.00
Agent in Tick Erad.—E. E. Wyndham 1080.00

<table>
<thead>
<tr>
<th>Title and Name</th>
<th>Total Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asst. to Veterinarians—J. E. Bailey</td>
<td>$1320.00 (year)</td>
</tr>
<tr>
<td>Asst. to Veterinarians—William Bivens</td>
<td>1200.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—G. W. Hill</td>
<td>1440.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—J. C. Hoats</td>
<td>1290.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—E. J. Jenkins</td>
<td>1440.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—J. C. Kinsey</td>
<td>1440.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—J. R. Linder</td>
<td>1200.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—Theo Malphrus</td>
<td>1200.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—A. G. Mitchum</td>
<td>1320.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—J. M. Rowell</td>
<td>1200.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—H. N. Sessions</td>
<td>1440.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—W. B. Skilling</td>
<td>1200.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—C. C. Strobel</td>
<td>1200.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—G. F. Sullivan</td>
<td>1200.00</td>
</tr>
<tr>
<td>Asst. to Veterinarians—F. H. Worthington</td>
<td>1140.00</td>
</tr>
<tr>
<td>Cattle Inspector—A. M. Addison</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—M. C. Butler</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—G. S. Clark</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—H. D. Crosby</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle inspector—S. P. Elliott</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—E. E. Easterlin</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—W. D. Gregorie</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—T. B. Hay</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—D. H. Heyward</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—R. H. Hudson</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—J. J. Jackson</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—L. C. Lachicotte Jr.</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—C. O. McCormack</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—W. H. McKie</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—W. H. McNeill</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—J. H. Marvin, Sr.</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—J. M. Oliver</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—A. J. Richardson</td>
<td>1200.00</td>
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<tr>
<td>Cattle Inspector—W. T. Rowell</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—E. M. Seabrook, Jr.</td>
<td>1440.00</td>
</tr>
<tr>
<td>Cattle Inspector—O. A. Speights</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—B. H. Vereen</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—B. L. Walpole</td>
<td>1200.00</td>
</tr>
<tr>
<td>Cattle Inspector—W. C. Walker</td>
<td>1200.00</td>
</tr>
</tbody>
</table>

From S. C. Apprpr'n | From Federal Apprpr'n
$1320.00 | 1200.00
1200.00 | 1440.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1320.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
1200.00 | 1200.00
**Supplementary Reports**

<table>
<thead>
<tr>
<th>Title and Name</th>
<th>Total Salary</th>
<th>From S. C.</th>
<th>From Federal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle Inspector—L. M. Alsbrooks</td>
<td>5.00 (day)</td>
<td>$5.00</td>
<td></td>
</tr>
<tr>
<td>Cattle Inspector—B. A. DuBois</td>
<td>1200.00 (year)</td>
<td>1200.00</td>
<td></td>
</tr>
<tr>
<td>Cattle Inspector—L. E. Eagerton</td>
<td>5.00 (day)</td>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>Cattle Inspector—H. C. Gore</td>
<td>50.00 (month)</td>
<td>50.00</td>
<td></td>
</tr>
<tr>
<td>Cattle Inspector—L. P. Hardwick</td>
<td>50.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cattle Inspector—E. J. Hotchkiss</td>
<td>5.00 (day)</td>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>Cattle Inspector—F. M. Johnson</td>
<td>5.00</td>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>Cattle Inspector—R. K. Johnson</td>
<td>5.00</td>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>Cattie Inspector—James H. Pepper</td>
<td>100.00 (month)</td>
<td>100.00</td>
<td></td>
</tr>
<tr>
<td>Cattle Inspector—J. E. Williams</td>
<td>5.00 (day)</td>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>&quot;Clerk—J. E. Wilson&quot;</td>
<td>1800.00 (year)</td>
<td>1800.00</td>
<td></td>
</tr>
<tr>
<td>&quot;Clerk—J. M. Leaphart&quot;</td>
<td>1200.00</td>
<td>1200.00</td>
<td></td>
</tr>
<tr>
<td>&quot;Veterinary Inspector—M. G. Smith&quot;</td>
<td>1500.00</td>
<td>$1500.00</td>
<td></td>
</tr>
</tbody>
</table>

*J. E. Wilson and J. M. Leaphart, clerks, are paid out of Hog Cholera Control Reinvestment Fund.

"M. G. Smith, veterinary inspector, is also paid part salary by Orangeburg County.

Note: Most of the Assistants to Veterinarians and Cattle Inspectors are employed for only a portion of the year. They pay their own traveling expenses.

Respectfully submitted,

W. K. LEWIS,

Inspector in Charge and State Veterinarian.
No. 45.—Interim Report To The Committee in re
Clemson Agricultural College For The
Investigating Staff.

Scope of Activities:

Clemson Agricultural College is not merely a state supported
institution of higher learning, as is believed by many well informed
intelligent people of the state, but carries on very diverse activities,
some only remotely related to educational work as the term is
usually interpreted. The principal activities of the institution may
be roughly classified as follows:

1. Work of College Proper. This consists of instruction in
engineering, agricultural, and textile work and in other subjects
usually taught in a technical school.

2. Research Work: This consists of experimental and other
research work, especially in agriculture, for the purpose of discovering
facts and principles hitherto unknown and of disseminating them
in such fashion as to make feasible their widest possible use in
actual practice. For the purpose of this work the grounds at
Clemson College are used and experiments stations have been
established in the Pee Dee section at Florence and in the coast
section at Summerville.

3. Extension Work: ...This work consists of carrying to the
farmers of the state through county agents, through bulletins and
press articles, and through other means the greatest possible amount
of information relating to the best practice with regard to crop
rotation, soil fertility, means of combating insect pests, and other
agricultural matters.

4. Live Stock Sanitary Work: This consists of certain work in
the field undertaken for the purpose of controlling and prevent-
ing epidemic and other diseases among live stock.

5. Fertilizer Inspection: This work consists of the collection
and analysis of fertilizers offered for sale in the state and the deal-
ing with violation of laws relating to the manufacture and sale of
fertilizers through prosecution of offenders or other means. Only
in the broadest and vaguest sense can this be considered as educa-
tional work: in essence it is law enforcement work, though of an
agricultural nature.

6. Other Activities: The college also undertakes voluntarily or
in accordance with law several other activities such as the manufac-
ture and distribution of serum for the control of hog cholera, the
slaughter of diseased stock, tick eradication work, and the control
of insect pests.
For the purpose of carrying on the above activities the administrative officers have found it advisable not to attempt to do all the work from Clemson College. As is mentioned above, experiment stations have been established at Florence and Summerville. In connection with live stock sanitary work and certain inspection work, district offices with scientific and clerical staffs of their own have been established at Florence, Aiken, and Spartanburg.

The location of the school at Clemson College also enforces upon the institution the undertaking of a work of unusual activities. Owing to the fact that the school is located in the open country the college has been compelled to provide dormitories, a mess hall for students, housing and hotel facilities for the faculty and other employees, a water and sewerage system of its own, a heating and lighting plant, and even a highway system with a maintenance force. In effect the President is not only the head of an educational institution of considerable size, but is also the mayor of a small but very active municipality and the director of extension research, and law enforcement activities that cover the whole state with considerable thoroughness.

Management and Internal Organization:

The Board of Trustees at Clemson Agricultural College is made up of thirteen members, six of whom are elected by the Legislature and seven of whom are appointed in accordance with the will of Thomas G. Clemson, which named seven of the original trustees and provided that as vacancies occur the remaining non-elected members should name their successors. The Board of Trustees determines policies and either as a whole or through its committees passes upon certain executive matters; the administration of the diverse activities of the college, however, is in the hands of the President who, as a matter of fact, takes an active, if unofficial part also in the determination of policies.

Whether the management of such an institution as Clemson Agricultural College, supported for the most part by public funds, should be placed in the hands of a Board of Trustees the majority of whom are not selected through any state agency is a matter of policy to be determined by the Legislature and the electors. Without question the constitution of the Board is the cause of more or less unfavorable criticism. Equally without question the amount of unfavorable criticism has been held to a minimum through the selection of a high type of men by successive trustees under the terms of the bequest and by the policies followed by the Board as a whole; it appears that as a rule the seven trustees have previously been endorsed by the people through their selection for public office and command the confidence and respect of the people of the state, while additional protection is given by the law providing that no money can be expended unless it is authorized by a vote of at least nine of the members of the Board. A weak or arbitrary board
would probably lead to an immediate and overwhelming demand for a change in the form of management. There seems to be no doubt that the state can at any time make it impossible for the College to continue on the present scale by withholding its support; the income derived from the original bequest and the rental value of the lands is inconsequential in comparison with the total receipts, while the direct state appropriations and the amounts received from the federal government on condition that they be expended under the direction of the state make up by all odds the largest part of the income. It may be pointed out also that it is not clear in view of the provisions of Thomas G. Clemson's will whether the state could be given a clear title to the grounds and buildings under a different form of management; some lawyers hold, however, that legal means of effecting a change exist.

The President has built up the type of internal organization for administrative purposes which is generally considered most effective in securing results, most economical as to cost, and most simple in operation. As is implied above the President is responsible to the Board of Trustees for all administrative matters. Seven Directors, in addition to the Treasurer and Secretary of the Fertilizer Inspection Analysis, are at the head of sub-divisions and constitute the President's unofficial advisory cabinet; each Director is responsible for the operation and expenditures of his department and the teachers and other employees deal with him directly instead of with the President.

Receipts and Expenditures:

The financial statement of such an institution as Clemson Agricultural College, engaged in diverse activities, is of necessity somewhat complex and very voluminous if details are to be shown. The following summaries taken from the budget of the fiscal year 1921-22 contain the most important facts:

SUMMARY—CLEMSON COLLEGE FINANCES.

PROSPECTIVE RESOURCES.

(a) Available for Collegiate Purposes and Certain Required Public Services.

1. Interest on Clemson Bequest $3,512.36
2. Interest on Lanscript 5,754.00
3. Estimated tuition 13,000.00
4. Morrill and Nelson Funds (U. S.) 25,000.00
5. Sales, rents, interest, etc. 30,000.00
6. Estimated Fert. tax and penalties 200,000.00
7. Remaining in reserve fund 77,209.33—$354,475.71
Supplementary Reports

(b) Available for Specified Public Service Only—

<table>
<thead>
<tr>
<th>Service</th>
<th>State</th>
<th>U. S. D. A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Extension Service</td>
<td>$ 94,147.15</td>
<td>$276,922.42</td>
</tr>
<tr>
<td>8. Tick Eradication</td>
<td>20,000.00</td>
<td></td>
</tr>
<tr>
<td>9. Live Stock Sanitary Work</td>
<td>50,000.00</td>
<td>32,580.00</td>
</tr>
<tr>
<td>10. Agricultural Research</td>
<td>50,000.00</td>
<td>33,670.00</td>
</tr>
<tr>
<td>11. Crop Pest Commission</td>
<td>10,000.00</td>
<td>10,000.00</td>
</tr>
<tr>
<td>12. Slaughter Diseased Stock</td>
<td>2,000.00</td>
<td></td>
</tr>
<tr>
<td>13. Hog Cholera Control</td>
<td></td>
<td>50,000.00</td>
</tr>
</tbody>
</table>

$126,147.15 $402,372.42 $628,519.57

(c) Available for Certain College Activities

14. Revolving Accounts (receipts) $215,893.22**

(d) Available for Cadet Living Expenses

15. Cadet Fund Receipts $246,443.00***

GRAND TOTAL OF RESOURCES $1,445,331.50

* Only $242,049.72 of this amount passes through the College Treasurer. Of this $121,532.39 is administered by Winthrop College for Home Demonstration.

** Dairy herd, farm, animal husbandry, etc.

*** Last year's figures.

COMPARATIVE STATEMENT

Fiscal Years 1920-21—1921-22

COLLEGE RECEIPTS—

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated for 1920-21</th>
<th>Actually Received</th>
<th>Estimated for 1921-22</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interest on Clemson B-quest</td>
<td>$ 3,512.36</td>
<td>$ 3,512.36</td>
<td>$ 3,512.36</td>
</tr>
<tr>
<td>2. Interest on Land Script</td>
<td>5,754.00</td>
<td>5,754.00</td>
<td>5,754.00</td>
</tr>
<tr>
<td>3. Morrill and Nelson Funds (U. S.)</td>
<td>25,000.00</td>
<td>25,000.00</td>
<td>25,000.00</td>
</tr>
<tr>
<td>4. Tuition and Fees</td>
<td>17,000.00</td>
<td>13,490.40</td>
<td>13,000.06</td>
</tr>
<tr>
<td>5. Sales, rents, interests, etc.</td>
<td>22,000.00</td>
<td>40,238.54</td>
<td>30,000.00</td>
</tr>
</tbody>
</table>

73,266.36 93,985.30 77,266.36

6. Fertilizer Tax and Penalties              | 300,000.00            | 167,505.16        | 200,000.00            |

373,266.36 261,490.46 277,266.36

7. From Reserve Fund                         | 77,293.68             | 77,293.68         | 77,293.68             |

8. TOTALS                                     | $373,266.36           | $338,694.14       | $354,475.71           |
### EXPENDITURES—
#### (a) Collegiate Expenses:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Salaries</td>
<td>$169,150.00</td>
</tr>
<tr>
<td>10. Coal, labor, etc</td>
<td>$113,984.32</td>
</tr>
<tr>
<td>11. Total operating expenses</td>
<td>$289,134.32</td>
</tr>
<tr>
<td>12. Equipment for teaching</td>
<td>$15,785.16</td>
</tr>
<tr>
<td>13. Building and equipment</td>
<td>$30,185.24</td>
</tr>
<tr>
<td>14. Totals for College Work</td>
<td>$328,603.72</td>
</tr>
</tbody>
</table>

#### (b) Public Service (From College Funds):

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Scholarships and Adm.</td>
<td>$17,000.00</td>
</tr>
<tr>
<td>16. Fert. Inspection and Anal.</td>
<td>$51,570.00</td>
</tr>
<tr>
<td>17. S. C. Experiment Station</td>
<td>$6,000.00</td>
</tr>
<tr>
<td>18. Miscellaneous</td>
<td>$2,806.00</td>
</tr>
<tr>
<td>19. Totals Public Service</td>
<td>$77,376.00</td>
</tr>
</tbody>
</table>

#### GRAND TOTALS

<table>
<thead>
<tr>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>$405,879.72</td>
</tr>
<tr>
<td>$338,694.34</td>
</tr>
<tr>
<td>$850,922.09</td>
</tr>
</tbody>
</table>

An analysis of these statements show that while total receipts and expenditures accounting to approximately one and a half million dollars in the course of a year may reasonably be expected, the amount available for collegiate instruction and for building and maintenance purposes is really very modest. About a quarter of a million dollars is received from cadets for living expenses and is paid out for the same purpose, the dormitories and mess hall being run at cost. Over $200,000 in the revolving accounts is received from the dairy, from farms, and from similar operations and is paid out for carrying on these activities. Over $600,000 must be used for certain specified public services having little to do with the activities of the college proper. Only $350,000 approximately, remains for collegiate purposes, most of which comes from the fertilizer tax and is uncertain; in addition the $77,000 in the reserve fund is not income but is a reserve built up through careful economies over a period of years and is used merely to tide the college over the last half of the calendar year when no considerable receipts from the fertilizer tax may be expected. From this amount the salaries of the teaching and maintenance force must be paid, coal and other supplies purchased, and buildings and equipment provided. While casual study of these statements is likely to lead to the conclusion that a large amount of money is available for strictly college purposes, as a matter of fact the amount is little more than is appro-
appropriated for the University of South Carolina and the Citadel, both of which have smaller attendance and which do not require as much or as expensive equipment, and considerably less than is appropriated for Winthrop College, which has a larger attendance but which also is not required to provide such extensive and expensive equipment. In fact, because of the comparatively small amount of money available for college work proper and because of the uncertainty as to the amount that can be collected from the fertilizer tax, there is a perennial danger that this work will be seriously hampered for lack of available funds.

**Efficiency of Operation:**

From whatever angle the work of Clemson Agricultural College is viewed evidence of efficiency, economy and effective results are apparent. The standing of Clemson College in educational circles and the success achieved over a considerable period by the graduates make unnecessary any extended comments on the strictly educational work. As to economy, the internal organization and procedure are well adapted to securing maximum results at a minimum cost. The Professor of Architecture, for example, is responsible for the maintenance of the buildings and grounds and the Director of the Engineering Department for the operation of other college owned utilities such as the water, light, power, and sewerage systems, as a result, the buildings on the whole are in a good state of repair and the costs of maintenance have been very moderate. The rent of some sixty houses occupied by members of the teaching staff and others is in some cases about 10% of their cost, the occupants paying for their water, gas and other services; this rental provides for maintenance, depreciation and interest on the investment. The commissary system and records might well serve as a model for several state institutions and the same is true of the farm records. The system of purchasing is well worked out and adapted in every particular to the needs of the institution. Cost data are collected, scrutinized, analyzed, and used both for current administrative purposes and for determining policies. At every turn there is evidence of the smooth frictionless working of a carefully devised and operated machine calculated to bring about good results with minimum effort and cost. The recommendations made in this report deal almost entirely with matters of policy or with small matters of organization or procedure almost inconsequential in view of the operation of the College as a whole. The expense of operation—about $300 per student for collegiate purposes in 1920-21—is moderate in view of the buildings, laboratories, shops and personnel required to give instruction of a high standard in agriculture, engineering textiles, and other technical subjects.
Desirability of Direct State Appropriation:

As is stated in preceding sections, the college received the receipts from the fertilizer tax, which vary from year to year largely according to industrial conditions; the gross collections exceeded $300,000 in 1919-20 and fell below $151,000 in 1914-15 (the average for 31 years has been $155,000). Until recently this tax provided the College with a liberal income out of which it could pay running expenses and make considerable outlays for buildings and other permanent equipment. With the growth of the college and the increase of operating costs, however, this method of financing the college work proper has become less and less satisfactory, and in the interest of continuity of policy and program and economical management should be discarded as soon as possible in favor of direct appropriations. It is particularly unfortunate that the college proper should depend upon such an uncertain income while specified appropriations are made for public work such as live stock sanitation. The administrative officers are able to determine with great accuracy the money needed to carry on the collegiate work and have given ample evidence through the accumulation of the reserve fund, through the construction of a large number of buildings, and through economical management that they are unlikely to ask for excessive amounts or to expend appropriations improperly if the Legislature makes this change. On the other hand, there is every evidence that the management is hampered and must follow a cautious policy as long as reliance is placed upon the fertilizer tax, while certain desirable kinds of work such as forestry, cannot be undertaken at all. It would be better from every point of view to turn the fertilizer tax into the state treasury and to make direct appropriations sufficient to meet the needs of the collegiate work.

Building Program:

The building program in recent years has been as uncertain as the fertilizer tax upon which it has depended. The present buildings are not adequate to house properly the present student body and teaching force despite the fact that the attendance has not reached the point generally considered as most desirable to reduce the per capita cost to a reasonable amount without at the same time increasing the number of students to such an extent that the best educational and social results are not attained; in view of the present attendance of approximately 1000 of the likelihood of considerable increase in the next few years if facilities are provided, and of the desirability of an increase of at least 25% in order to reduce per capita costs, it would appear desirable to lay out and follow a definite building program. It is believed that if the Legislature should adopt the plan of providing say $100,000 a year for a period of ten years or about $150,000 a year for about six or seven years the physical equipment could be built up to keep
pace with the growth in attendance and that at the end of the period the college would be well equipped as to building for a considerably larger number of students without the necessity of a bond issue and a consequent practical doubling of building costs owing to interest payments. As yet there is opportunity to embark on this policy of relatively slow building up; a delay of two or three years would surely mean a bond issue to provide immediately the extra equipment necessary to take care of the increased number of students to be expected in that time. Even at present the extension service is poorly housed and seriously crowded and additional buildings are needed for some other departments.

Scholarships.

In the school year 1920-21, $12,749.10 was expended for scholarships and the advertising connected therewith and it is estimated that $20,000 will be needed for this purpose in the school year 1921-22. A separate report will take up the matter of scholarships in the state supported colleges.

Graduate Work:

Up to this time no attempt has been made to undertake graduate work at Clemson Agricultural College, partially because the finances and facilities of the institution have been taxed to provide for undergraduate work and partially because of the feeling on the part of the Board of Trustees and the President that such work is not yet necessary. It appears that the time is near at hand, however, when it will be desirable to offer graduate work in both agriculture and engineering. The University of South Carolina, with much poorer equipment and with much less adequate teaching staff at present offers graduate work in civil engineering; it will be pointed out in the interim report on the University that the University is the best place to build up a graduate school in the arts and pure sciences but that graduate work in applied science cannot be undertaken there without great duplication and prohibitive costs. Because of the teaching personnel and the equipment already at Clémson Agricultural College any graduate work of this kind should be undertaken there; and it is believed that the best interests of the state will be served if graduate courses are introduced within the next two or three years.

Salary Scale:

The plan of organization adopted make possible the building up of a strong teaching force at a very moderate expense. The salaries of the Directors in the main are $3500 though three are paid $4000, $4250, and $4500, respectively, while one (the Commandant) receives $1500 and a house in addition to his army pay. In general the highest paid professor under the director receives $2800, though in the Agricultural Department four receive from $3000 to $3250; the salaries of the other members of the teaching
staff range down to as little as $1400. No such perquisites as free rent, light, heat or fuel are furnished except in the case of the Commandant. The following list showing the positions and salaries in the engineering department is believed to be typical:

Director and Supt. of Heat, Light and Water...$4000.00
Professor of Civil Engineering .................. 2800.00
Professor of Electrical Engineering .......... 2800.00
Professor of Drawing and Architecture .... 2800.00
Professor of Electrical Engineering .......... 2800.00
Assistant Professor of Machine Shop .......... 2250.00
Associate Professor of Foundry and Forge ... 2250.00
Associate Professor of Drawing ................ 2250.00
Associate Professor of Mechanical Engineering .... 2500.00
Assistant Professor of Civil Engineering .... 2000.00
Assistant Professor of Architecture .......... 2000.00
Assistant Professor of Wood Shop ............ 2000.00
Instructor in Drawing .......................... 1800.00
Instructor in Shop Work ....................... 1600.00
Stenographer .................................... 1020.00

Total ........................................... $34020.00

In determining the starting salary and making advances no uniform plan is followed. In general the educational and professional attainments and the results secured in the class room are the prime considerations.

Form of Appropriations:

The form and content of the budget estimates and the section of the appropriation bill relating to Clemson Agricultural College are drawn up in an extremely unsatisfactory fashion as neither the total income and the sources from which it is derived nor the total expenditures with their purpose and character are shown. This is not the fault of the college authorities, for as a matter of fact Clemson Agricultural College has a very carefully worked out budget, perhaps more complete and accurate than any other large institution to which the state makes appropriations, and is able and willing to furnish any information in any form desired. It is eminently desirable that both the estimates prepared by the budget authorities and the appropriation bill should be drawn up in such form that members of the Legislature and interested tax payers may have a clearer picture of the income, of the expenditures, and of the purposes for which the money is spent. This would not entail any extra work worthy of mentioning on either the part of the college authorities or the budget officers, but would result in a distinct gain to the Legislature and in the end to the college itself by giving members of the Legislature an intelligent conception of the finances and needs of the institution.
Fertilizer Inspection Work:
The collection and analysis of samples of fertilizers require an annual expenditure of about $40,000, the largest item being $12,500 for the pay and travel expenses of thirteen inspectors, $8,500 for tags and printing, and $8,550 for the salaries of Chemists who engage in the analysis of samples. This work being in the nature of law enforcement and only indirectly related to education serves to put the College before many citizens in an unfavorable light. It is particularly unfortunate that the College should be placed in the position of bringing prosecutions, though the necessity for such action has been reduced to the minimum by the practice of making conspicuous in the annual statements the names of the manufacturers of samples found deficient as well as of the respects in which the samples are deficient. At the time the College was visited nothing was being done in the way of fertilizer inspection or analysis, as this work is confined almost entirely to the first half of the year; it is believed, however, that the work is more efficiently and economically handled than could reasonably be expected from any other state agency and that it should continue to be done by Clemson Agricultural College unless the unfavorable criticism which results is regarded as sufficient reason for transferring this work elsewhere. One difficulty of making the transfer is the necessity, in some cases at least, of making field tests with growing crops as well as chemical analysis.

Publicity Work:
In connection with the extension and research work a number of different kinds of publicity matter are prepared and distributed, including a weekly news letter “The Weekly News Notes”, bulletins and posters. This material appears to be prepared satisfactorily from the standpoint of scientific accuracy, news value, and suitability for the audience addressed. Some embarrassment results from the necessity of pointing out the lack of scientific accuracy in some of the material sent out by the Commissioner of Agriculture’s office through the Market Bulletin. The publicity matter of the college is well prepared and covers the field as thoroughly that it is not believed the necessity exists for the issuing of any such material by any other state agency.

Comments on Procedure and Conditions:
As is indicated in the preceding section, with rare exceptions the procedure is all that could be asked and existing conditions are very satisfactory. The following comments refer to some matters in which improvement might be possible:

Commissary Records: The Commissary records are on the whole very well kept but it would seem that the perpetual inventory system might be introduced with benefit in the record of supplies received and issued.
Chemical Supplies: It is understood that under the system prevailing last year no one individual was in charge of the store room for the equipment and the supplies kept in the chemistry building and as a result some of the apparatus in usable condition becomes scattered about the various laboratories and the stock of chemicals and chemical apparatus somewhat confused with certain parts broken and damaged. It is understood, however, that this condition has been remedied with the opening of the new school year by placing one individual in charge.

Fire Hazards: The recent fire in the kitchen and commissary, which was quickly extinguished, demonstrated the effectiveness of the school fire fighting force and equipment. The water pressure and the storage facilities seem ample, but it might be desirable to extend to the agricultural and dairy buildings, where gases and chemicals are used, the sprinkler system which has already been installed in the engineering building and shops and chemistry buildings, and the hotel. Possibly it might be advisable to install some additional hand fire extinguishers in some of the other buildings.

Summary of Recommendations:

It is recommended:

1. That direct appropriations from the state treasury be substituted for the income derived from the fertilizer tax.

2. The estimates and appropriations show the amount and sources of the income and the purpose and character of expenditures in considerable detail and that the estimates be supplemented by such supporting schedules as may be necessary to show a complete picture of the financial operations and needs of the college.

3. That a building program effective in 1922 and providing for annual appropriations of $100,000 for a period of ten years or $150,000 for six or seven years be adopted.

4. That consideration be given to the undertaking of graduate work in engineering and agriculture.

5. That the publicity work with regard to agriculture be continued along the present lines and that any such publicity work undertaken by other state agencies be either discontinued or transferred to Clemson Agricultural College.

6. That certain minor matters of procedure of maintenance be given attention.

INVESTIGATING STAFF
By Fred Telford,
Chief Investigator.