1895

Eighth Annual Report of the Agricultural Experiment Station of the University of Tennessee to the Governor, 1895.

University of Tennessee Agricultural Experiment Station

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EIGHTH ANNUAL REPORT

OF THE

Agricultural Experiment Station

OF THE

UNIVERSITY OF TENNESSEE

TO THE GOVERNOR.

1895.

KNOXVILLE, TENN.:

BEAN, WATERS & GUST, Printers and Bookbinder Manufacturers.

1896.
Bulletins of this Station will be sent, upon application, free of charge, to any Farmer in the State.

THE AGRICULTURAL EXPERIMENT STATION

OF THE UNIVERSITY OF TENNESSEE.

CHAS. W. DAHNEY, Jr., President.

EXECUTIVE COMMITTEE:
O. P. TEMPLE, JOSEPH W. ALLISON,
JAMES MAYS, T. F. P. ALLISON,
HUGH G. KYLE.

TREASURER: SECRETARY:
JAMES COMFORT. J. W. GAUT.

THE STATION COUNCIL IS COMPOSED OF ITS OFFICERS:
Dr. CHAS. W. DAHNEY, Jr., President.
CHAS. F. VANDERFORD, Secretary.
R. L. WATTS, Horticulturist.
J. E. McIBYDE, Chemist.
S. M. BAIN, Botanist.
G. C. HAMBLIN, Entomologist.
CHAS. A. MOORES, Assistant Chemist.
CHAS. H. WHITE, Librarian.
J. L. SPINKS, Farm Manager.

The Station has facilities for analyzing and testing fertilizers, cattle foods, milk and dairy products; seeds with reference to their purity or germinating power; for identifying grasses and weeds, and studying forage plants; for investigating the diseases of fruits and fruit trees, grains and other useful plants.

The Station Bulletins and Reports will be sent, free of charge, to any farmer within the State.

Packages by express, to receive attention, should be prepaid.

All communications should be addressed to the
SECRETARY OF THE
AGRICULTURAL EXPERIMENT STATION,
KNOXVILLE, TENN.

The Experiment Station building, containing its offices, laboratories and museum, and the plant-house and horticultural department, are located on the University grounds, fifteen minutes walk from the Custom House in Knoxville. The Experiment farm, stables, milk laboratory, etc., are located one mile west of the University, on the Kingston pike. Farmers are cordially invited to visit the buildings and experimental grounds.

Bulletins of this Station will be sent, upon application, free of charge, to any Farmer in the State.
REPORT TO THE GOVERNOR.

Letter of Transmittal.

KNOXVILLE, TENN., January 8th, 1896.

To His Excellency, Peter Turney,

Governor of Tennessee:

Sir:—We have the honor to submit herewith the Eighth Annual Report of the Agricultural Experiment Station of the University of Tennessee. This report is made in accordance with the Act of Congress, approved March 30, 1887, and the Act of the General Assembly of Tennessee, approved March 28, 1887. Section 5 of the first mentioned Act contains the following: "It shall be the duty of each of said Stations, annually, on or before the first day of February, to make to the Governor of the State or Territory in which it is located, a full and detailed report of its operations, including a statement of receipts and expenditures; a copy of which report shall be sent to each of said Stations, to the Secretary of Agriculture, and to the Secretary of the Treasury of the United States."

Hoping that the report will prove satisfactory to your Excellency, we remain, with great respect,

Your obedient servants,

O. P. TEMPLE,
Chairman Experiment Station Committee.

CHAS. W. DABNEY, JR.
President of the University.

J. W. GAUT, Secretary of the Board of Trustees.
TREASURER'S REPORT.

The Agricultural Experiment Station of the University of Tennessee, in account with the United States:

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$15,018.35

Total: $15,018.35

(Signed) JAMES COMFORT, Treasurer.

This is to certify that, as the authorized Auditing Committee of the Board of Trustees of the University of Tennessee, we have examined the accounts of the Treasurer of the Agricultural Experiment Station for the fiscal year ending June 30th, 1894 and find them correct; that the above is a true balance sheet corresponding with said accounts; that the said accounts show no more than seven hundred and fifty dollars was expended for building, and that there is a cash balance of $18.35.

(Signed) J. W. GAUT, F. A. R. SCOTT, S. B. LUTTRELL.

I hereby certify that Messrs. J. W. Gaut, F. A. R. Scott and S. B. Luttrell are the authorized Auditing Committee of this Board of Trustees.

(Signed) J. W. GAUT, Secretary of the University of Tennessee.

Personally appeared before me, W. W. Lee, Notary Public, the foregoing signers, personally known to me to be trustees and officers of the University of Tennessee, who made oath in due form of law that the above statements are true to the best of their knowledge, information and belief.

(Signed) W. W. LEE, Notary Public.
REPORT OF THE AGRICULTURAL EXPERIMENT STATION.

Dr. Chas. W. Dabney, Jr.,

President University of Tennessee:

Dear Sir,—Herewith I submit a report of the operations of the Agricultural Experiment Station of the University of Tennessee for the year 1895.

During the year ending December 31, 1895, the active members of the Station staff were as follows:

Chas. F. Vanderford, Secretary.
J. B. McBryde, Chemist.
R. L. Watts, Horticulturist.
Samuel M. Bain, Botanist.
Chas. E. Chambliss, Entomologist.
Chas. A. Mooers, Assistant Chemist.
Chas. H. White, Clerk and Librarian.
J. L. Spinks, Farm Manager, since July 1st.

The work of the Station upon the farm has been pursued upon the general lines already marked out. This includes the study of forage plants, the best methods of growing and economic fertilization, their feeding values at various stages of growth, how best to use them separately and in combination, etc.; tests of forage plants recently introduced into the State; and in connection with this work to determine the methods of management and feeding of milch cows so as to secure most satisfactory results under such conditions as can be easily realized by the farmers of Tennessee.

The one drawback has been the want of a properly constructed barn equipped with the necessary appliances. This want will be supplied during the coming year.

We have recently added materially to the equipment of farm machinery. An Acme engine, rated at six-horse, and easily affording eight-horse power when needed, has been put in place, and is now used for cutting silage, grinding grain, etc.; and, as soon as possible, this engine and boiler will be connected in a suitable way with the dairy building, to run our separator and other machines, and to furnish live steam for various purposes.

The horticultural work upon the Station farm is being gradually extended. Numerous variety tests are conducted by the Horticulturist, giving results of great value, not only for this section but equally so for all sections of the State. The more
important work will be continued as determined two years ago, viz: the planting and growing to maturity of pears, grapes, etc., with a careful study of conditions of soil, exposure, climate, fertilization, etc., and an endeavor to secure healthy development and abundant fruiting, with prevention of fungous diseases and of injury by insect pests. The series of terraces will be completed this year, and will soon be fully planted with the trees and vines intended to occupy them. So far we have succeeded fully as well as can be desired. Not a tree has been injured by disease of any kind. Upon a few of the pear trees now two years planted, were found last summer the pear-leaf blister mites (Phytoptus pyri); these enemies are now under the watchful observation of the Entomologist of the Station, who will make timely application of the best known practical remedies.

Early in the year, a plat of about nine acres of land upon the Station farm was set apart for the use of the Division of Agrostology of the United States Department of Agriculture, this plat of land including the grass garden already established by this Station. The work thus begun will be carried on in the future under the immediate charge of Mr. F. G. Matthews, the Secretary of the Station supervising and directing operations as instructed by the Chief of the Division of Agrostology. No effort will be spared to carry out the designs and meet the expectations of the Department which has decided to establish here a garden for the propagation and test of such grasses, both native and foreign, as may prove valuable and worthy of dissemination throughout the Central Southern and Southwestern States.

During the past year frequent and earnest requests were made that one or more of the Station staff should attend meetings of farmers' institutes, horticultural societies, and farmers' conventions, in all parts of the State. On every occasion, when it was possible to do so, one and sometimes two of our active working force attended these meetings and entered heartily into this part of public service. When a short absence from duty at the Station can be permitted without neglect of important work in progress, the several members of the staff cannot be better employed than in attendance upon the meetings of farmers and horticulturists. The only serious difficulty is the one of traveling expenses. The Secretary, for himself and his co-workers, offers such help as can be given in institute work anywhere in the State, if the barely necessary traveling expenses can be paid.

The Station has had the cordial and helpful support of Com-
missioner T. F. F. Allison, of the State Bureau of Agriculture. The series of co-operative experiments in the growing of sugar-beets and the proposed investigations in potato culture, planned by the Commissioner, were not continued during the year 1895, for reasons beyond his control. The inspection of fertilizers has been unusually complete, the Station having made for the bureau, during the year 1895, one hundred and sixteen analyses. It is proper to state here that these analyses are not published by the Station, which has no authority to make such publication, nor to print anything concerning the fertilizers analyzed by our chemists.

A very important part of the work of the Station is that of correspondence with farmers, fruit and vegetable growers, owners and breeders of live stock, as well as a large number of our people not directly interested beyond some particular subject of inquiry. This correspondence is of such a character as to demand careful, pains-taking study of the subject matter of the letters sent out. Taken together, these letters of reply to inquiry for the past year cover several thousands of pages, every one of which had a special value to the individual addressed. We invite, rather than avoid, work of this kind, and only ask that those who write us shall state as clearly and fully as possible the observed facts with respect to the subject of inquiry. That sort of close observation necessary to make a clear statement about a diseased tree or plant, an unfruitful field, or a sick animal, will often bring a revelation of the truth to him who seeks, and will surely help us to such an understanding of the case as will possibly enable us to offer assistance of real, practical value.

During the year there have been issued bulletins:

Vol. VIII., No. 1. "Spraying Apparatus," "Insecticides," Fungicides. "Spraying Calendar." Of this bulletin seven thousand copies were issued in answer to often repeated and urgent demands from all parts of the State.

No. 2. "The Wild Onion." Five thousand copies have been distributed. It is hoped that this timely publication will help to prevent the further spread of this obnoxious plant, and perhaps contribute to its gradual destruction.

No. 3. Some Experiments with Fungicides on Peach Foliage. A bulletin of progress, mainly technical; a study of fungicides having in view the possibility of securing some safe, as well as effective remedy against fungi attacking the peach and related plants. One thousand copies were issued.
No. 4. "The Chinch Bug" (Blissus leucopterus). Five thousand copies were printed and distributed, particularly in the section of the State infected by this destructive insect during the spring and summer of 1895. The life history of the chinch bug, clearly illustrated, is given, so that this pest can be watched for and discovered in time; its natural enemies and diseases are described, and such remedial and preventive measures are pointed out as will enable our people to protect their crops by timely, prompt and energetic work.

Material for publication at an early date is on hand, waiting the completion of several important investigations. These are referred to in the reports of the several members of the Station staff herewith forwarded,

Very respectfully,

(Signed) CHAS. F. VANDERFORD,
Secretary.

REPORT OF THE CHEMIST.

Dr. Chas. W. Danby, Jr.,
President University of Tennessee:

Dear Sir:—The following report of the work of the Chemical Division of the Experiment Station for the year 1895 is respectfully submitted:

During the early part of the year work was begun on a study of the cattle foods of the State, especial attention being paid to cotton-seed meal. Some seventy samples of bran, shorts, corn meal, and the various by-products of cotton seed, were collected and carefully prepared for analysis; a portion of the original sample being retained for a mechanical examination. At the present writing the analytical work on these samples is nearly completed. We hope to push this work further, and to make it a systematic examination of all the important cattle foods of the State.

In the fall nine samples of sorghum cane grown from seed sent by the U.S. Department of Agriculture were examined for sugar, and the work is to be continued next year.

During the past year Mr. C. A. Mooers has had charge of the fertilizer work, making analyses of all the samples received during that time. Besides his regular fertilizer work, Mr. Mooers has undertaken a work has collected dietary studies with the department of the institution in some six experiments.

No important laboratory during the year was bought. The analytical samples of:

Samples of:

Samples of:

Samples of:

Samples of:

Samples of:

Samples of:

(Signed)

Dr. Chas. W. D.

Dear Sir:—In our last report of the "Horticulturist" January, 1893, in 1895, has conducted this work with the following seedlings of standard varieties in sections of the ready cultiva...
has undertaken a chemical study of the cow-pea, and for this work has collected some fifty samples of vines and peas. This work is to be continued next year. In connection with the dietary studies which are being carried on by the Chemical Department of the University, Mr. Mooers has estimated the nitrogen in some sixty odd samples, the estimations being made in triplicate.

No important additions were made to the equipment of the laboratory during the past year; only such apparatus and chemicals were bought as were needed to replace those destroyed.

The analytical work may be summarized as follows:

- Samples of fertilizers: 100
- Samples for the study of cattle foods: 50
- Samples of miscellaneous cattle foods: 8
- Samples of cow peas: 9
- Samples of sorghum cane: 9
- Samples of Irish potatoes: 1
- Samples for nitrogen in dietary studies: 64
- Samples of soil: 1
- Samples of chert: 1
- Samples of Tennessee phosphates: 2

Respectfully,

(Signed) J. B. McBRYDE,

Chemist.

REPORT OF THE HORTICULTURIST.

DR. CHAS. W. DABNEY, JR.,

President University of Tennessee:

Dear Sir:—I have the honor to submit the following report of the Horticultural Division for the year 1894-'95:

In our last annual report reference was made to an investigation of the apple industry of Tennessee which was begun in January, 1893. The heavy yield of apples throughout the State in 1895, has afforded the Horticulturist an opportunity to conduct this work with gratifying results. The work was carried on with the following objects in view: 1st, to locate and test new seedlings of special merit; 2nd, to ascertain the well-known standard varieties which are most successfully grown in different sections of the State; 3rd, to study seedlings and varieties already cultivated with a view to originating new and better
varieties by hybridization; 4th, to study the soils, exposures and locations best adapted to special varieties of the apple. Commercial growers and those possessing orchards mainly for supplying the home table, have manifested great interest in the investigation, and most earnest co-operation has been received from hundreds of growers. They have written letters relative to the varieties cultivated in almost every county. Through their assistance, we have obtained much important information in regard to the soils and locations on which apples have been grown to the greatest perfection. But the information which is the most highly prized is that concerning new seedlings. Specimens of over three hundred varieties, including many seedlings, have been kindly sent to the Experiment Station for examination. A type of each variety has been carefully described, preserving a detailed record of notes made upon its origin if new, character of soil where grown, the location and exposure of the land where it has been produced, size of fruit, its shape, color, skin, cavity, stem, basin, calyx, flesh, flavor, quality, core and seed, date of ripening, keeping qualities, productiveness, and habit of tree growth. In most instances the specimens have been photographed in half sections, for the purpose of illustrating the proposed bulletin which will contain a full report of the investigation. Many new seedlings of decided local value have been found, while quite a number of them will doubtless prove of general value and supersede some of the standard varieties now cultivated in the state. This study of Tennessee apples should be continued indefinitely,—especially that pertaining to seedlings and the originating of new varieties by hybridization. The data already collected will be prepared as rapidly as possible for publication.

The pear orchard on the college farm was greatly enlarged last spring. The trees have made a vigorous growth and satisfactory results are expected from this plantation.

The Station vineyard has received the proper attention in the way of pruning, spraying, cultivating, and fertilizing. Many varieties fruited in 1895, a complete record of which has been preserved for future use.

In April, over fifty varieties of strawberries of the most recent introduction were added to the horticultural grounds. Variety tests of this fruit are of limited value, but these trials are necessary to satisfy a demand from our correspondents. The work, however, is very simple, and we believe the results which

accred fully compensate funds necessary to conduct Bulletin Vol. VIII., classes of spraying apple most satisfactory for machines and all of tested at the Station.

Bulletin Vol. VIII., 1 study of the Wild Onion tanical description, genus, vileness, methods and methods of cure trouble to dairymen in It affords us pleasure horticultural grounds. The wood capping to prevent of the metal and temperatures. The ventilation is accomplished operates four continuous control of the temperature point, and may be operated with a Hitching's in which was an almost has been removed and the same foundation wall may be controlled in well adapted to various be used this winter for and experiments in the

(Signed.)
accrue fully compensate for the small expenditure of time and funds necessary to conduct the experiments.

Bulletin Vol. VIII., No. 1, illustrates and describes different classes of spraying apparatus and nozzles which we consider the most satisfactory for various kinds of work. Several of the machines and all of the nozzles mentioned were thoroughly tested at the Station.

Bulletin Vol. VIII., No. 2, is a fully illustrated report upon our study of the Wild Onion (Allium victale, L.) embracing its botanical description, general distribution, distribution in Tennessee, vileness, methods of propagation, methods of dissemination, and methods of combating this weed which gives so much trouble to dairymen in some parts of the State.

It affords us pleasure to present herewith, a view of the Station greenhouse which was completed November 1, 1895. The superstructure consists of curved wrought iron rafters, connected laterally with iron purlins, which rest on iron sills capping the foundation walls. The iron framework is covered with a light wood capping to prevent difficulty from expansion and contraction of the metal and loss of heat from exposure to outside temperatures. The glass used is large and of superior quality. Ventilation is accomplished by means of patent machinery which operates four continuous lines of ventilators, giving perfect control of the temperature; they are self-locking, adjustable at any point, and may be opened and closed in a few moments. The side benches or tables consist of iron frames with cement bottoms under each of which are several four inch pipes connected with a Hitching's hot water boiler. The lean-to structure, which was an almost useless attachment to the old greenhouse, has been removed and a low span-roof house erected upon the same foundation walls. The temperature in these two houses may be controlled independent of each other. Both houses are well adapted to various lines of experimental work. They will be used this winter for the culture of flowers, decorative plants, and experiments in the forcing of lettuce and tomatoes.

Respectfully,

(Signed) R. L. WATTS,
Horticulturist.
DR. CHAS. W. DABNEY, JR.

President University of Tennessee:

DEAR SIR:—Since the last annual report of the Botanist, work on the herbarium has steadily progressed, and most of the accumulated specimens have been mounted and arranged. Accessions are constantly being made to our collection, mostly by exchange. The Station is a permanent subscriber to Ellis and Everhardt's North American Fungi and to Seymour and Earle's Economic Fungi; several centuries have been added during the year. Some attention has also been given to a study of the mycologic flora of the State. Small collections have been made in the counties of Rutherford and Knox.

An increasing interest is manifested on the part of our farmers and fruit growers in this department of the Experiment Station work. The Botanist has received during the year inquiries from different portions of the State concerning the following diseases: anthracnose of the raspberry, mildew and black spot of the rose, scab, leaf rust, and ripe rot of the apple, black rot of the grape, peach leaf curl and plum pockets. Probably the most widespread disease of fruit in Tennessee is the apple leaf rust. It is the opinion of the Botanist that much could be saved to the farmers and fruit growers of the State if there were a wider knowledge of the advancement in the methods of treating plant diseases made during recent years. It is hoped that Bulletin No. 1 of the current volume will do much toward accomplishing this. To promote further this desired end, the Botanist respectfully asks that he be given opportunity during the next year to set forth his work before the farmers at some of their annual conventions.

The chief matter with which this department of the Station has been concerned during the past year was an investigation with a view to finding a remedy for peach rot. All the available literature bearing directly or remotely on the subject was carefully studied in the first months of the year. In order to make careful tests of remedies it was necessary to have access to an orchard where a considerable number of trees of different varieties could be found and where the rot had been especially injurious in past seasons. To this end, a circular letter was sent out to various fruit growers in the State. After carefully surveying the field, the orchard of Mr. J. W. Patton, of Cleveland, was selected, and experiments began March 15. After having made two applications with the standard fungicide, it was made clear that this method did not control the disease, so other fungicides were employed to find out just how far this method had gone in this way. The first time the Bulletin No. 3 of the preferred. This investigation.

It is the opinion of the Botanist that the pursuit of any of the above listed problems promises with the general need for this department for the past season. An especially need is that the fruit growers in the State that will be accomplished by the Botanist.

(Signed)

DR. CHAS. W. DABNEY

DEAR SIR:—So far as is permitted, the work has been continued on the part of the Botanist, but a partial study of the insectary be done at a small expense for conducting the work.

During the year a cabinet, and a few species
with the standard fungicides, the great injury to the foliage of the trees made it clear that success with the mixtures used was hopeless, so the work was abandoned for the time. The remainder of the season was devoted to a study of the effect of fungicides on peach foliage. Nearly forty different spraying mixtures were employed in the experiments. The effort was made to find out just what compounds are injurious to the foliage. So far as known to the Botanist, the problem has never been approached in this way before, and several compounds were thus tried for the first time. The results have been published in Bulletin No. 3 of the present year, to which you are respectfully referred. This investigation will be continued during the next season.

It is the opinion of the Botanist that the solution of physiological problems promises more profitable results for agriculture than the pursuit of any other branch of the science of botany. It is a pleasure to record that several pieces of physiological apparatus have been added to the outfit for this work during the past year. It is respectfully requested that as large a sum as is consistent with the general needs of the Station be placed at the disposal of this department for the purchase of more physiological apparatus. An especial need is the fitting up of a room with water fixtures, tables, cases for apparatus, etc.

Respectfully submitted,

(Signed) SAMUEL M. BAIN,
Botanist.

REPORT OF THE ENTOMOLOGIST.

DR. CHAS. W. DABNEY, JR.

President University of Tennessee:

DEAR SIR:—So far as the equipment of this division would permit, the work has been pursued along the lines indicated in last report. The habits of several injurious insects have been partially studied, but the entire work has been greatly retarded on account of the defectiveness of the quarters that were furnished for such investigations. As suitable apartments are necessary for conducting biological work, I will suggest that an insectary be erected as an annex to the conservatory. This can be done at a small cost, and will greatly enhance the value of my work.

During the year valuable additions have been made to the cabinet, and special attention was given to the biologic series.
Two weeks of the past summer were spent in Rutherford county, where the chin-chin bug had occurred in unusual numbers. This time was actively employed in making observations and conducting experiments, the results of which are published in Bulletin No. 4 of this volume.

The inquiries that were made during the past season about injurious insects show that there exists within the State almost a total ignorance of the habits of the common species, and hence that remedies which may be suggested from time to time can be intelligently applied. I recommend that a bulletin containing the life histories of these insects be published.

Two pests, hitherto unknown in the State, have been noted. The fruit-bark beetle (Scolytus rugulosus Ratz), which is one of these new enemies of our orchards, has been reported from several localities; and the San Jose Scale (Aspidiotus perniciosus Comp), the other, has been reported from only one locality. To prepare those who have not, and those who have, suffered from the attack of these insects, information should be furnished in a bulletin, before the presence of these pests causes general alarm.

In conclusion, I will ask that in your appropriations for the next year you will provide for the purchase of books on systematic entomology.

Respectfully submitted,

(Signed)  

CHAS. E. CHAMBLISS,  

Entomologist.

REPORT OF THE LIBRARIAN.

Dr. Chas. W. Dabney, Jr.,  

President University of Tennessee:

Dear Sir:—The library of the Station is composed chiefly of technical works, sets of periodicals and bulletins and reports which treat either of agriculture, horticulture, chemistry, botany or zoology. The library is open to all connected with the University, but books are taken out by members of the staff only.

The publications belonging to the library are disposed as follows:

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</table>

The volumes not ce available. Those and reports received are volumes of the Jahrbucher: Landwirtschaft; Jahres-Bericht, Thie Chemie; Journal d'Chemie; and Fresenius.

As soon as more stored away will be c

During the year c have been added to t Agricultural Gazette, American Agricultura Guide; The National Register; The P. Wallace's Farmer and Home; Farm Guide; The Progressive Sturial Epitomist; The Hog Journal; Far Magazine; Texas I The Clover Leaf; The Elgin Dairy I man; The St. Loui Baltimore Weekly.

During the year c
The volumes not catalogued are packed away in cases and are not available. Those bound consist of newly bound periodicals and reports received during the year. Among those unbound are volumes of the following periodicals: Landwirtschaftliche Jahrbucher; Jahresbericht, Agrikultur Chemie; Journal für Landwirtschaft; Die Landwirtschaftlichen Versuch Stationen; Jahres-Bericht, Thier Chemie; Justus Liebig's Annalen der Chemie; Journal d'Agriculture pratique; Central-Blatt, Agr. Chemie; The Analyst; Zeitschrift für Analytische Chemie, Fresenius.

As soon as more shelves are provided, these volumes now stored away will be catalogued and made accessible.

During the year current volumes of the following periodicals have been added to the library by subscription:

Agricultural Gazette of New South Wales; American Chemical Journal; American Gardening; Annals of Botany; Botanical Gazette; Canadian Entomologist; Entomological News; Gardeners' Chronicle; Garden and Forest; Bulletin of the Torrey Botanical Club; Journal of Botany; Journal of the Chemical Society; Journal of the Royal Microscopical Society; Microscope; Microscopical Journal; Revue Mycologique; Annales Agronomiques; The Entomologists' Monthly Magazine; Botanisches Centralblatt; Die Landwirtschaftlichen Versuch-Stationen; Annales de la Societe Entomologique de France.

Besides transactions and proceedings of various scientific, philosophic and natural history societies, the following exchanges have been received:

American Agriculturist; Breeders' Gazette; Hoard's Dairymen; Jersey Bulletin; The American Creamery; The Farmer's Guide; The National Swine Journal; The Holstein Friesian Register; The Practical Farmer; Southern Stock Farm; Wallace's Farmer and Dairymen; Farmers' Home; Farm and Home; Farm and Fireside; The Louisiana Planter; The Progressive South; The Successful Farmer; The Agricultural Epitomist; The Oregon Agriculturist; American Corn and Hog Journal; Farmers' Call; Farmers' Magazine; The Farm Magazine; Texas Farm and Ranch; The Industrial American; The Clover Leaf; Agricultural South; The Grange Visitor; The Elgin Dairy Report; The Homestead; The Texas Stockman; The St. Louis Journal of Agriculture; Mirror and Farmer; Baltimore Weekly Sun.

During the year all duplicates of back numbers of all Station
publications not needed were returned to the stations from which they were issued. If this were done by all the stations, the matter of completing files would be much simplified.

Upwards of 2200 station publications are now on file in the library. The card index to station publications sent out by the U. S. Department of Agriculture is received and has been distributed to number 9400.

Bulletins have been received from the stations during the year as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>Publications</th>
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<tbody>
<tr>
<td>Ala.</td>
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</tr>
<tr>
<td>Ariz.</td>
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</tr>
<tr>
<td>Calif.</td>
<td>3</td>
</tr>
<tr>
<td>Conn.</td>
<td>2</td>
</tr>
<tr>
<td>Ga. (Storrs)</td>
<td>4</td>
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<tr>
<td>Ind.</td>
<td>4</td>
</tr>
<tr>
<td>Iowa</td>
<td>4</td>
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<tr>
<td>Kan.</td>
<td>6</td>
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<tr>
<td>Md.</td>
<td>8</td>
</tr>
<tr>
<td>Mass.</td>
<td>19</td>
</tr>
<tr>
<td>Mich.</td>
<td>11</td>
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<td>Miss.</td>
<td>4</td>
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<td>Mo.</td>
<td>3</td>
</tr>
<tr>
<td>Neb.</td>
<td>7</td>
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<tr>
<td>N. H.</td>
<td>9</td>
</tr>
<tr>
<td>N. J.</td>
<td>5</td>
</tr>
<tr>
<td>N. Y.</td>
<td>26</td>
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<td>N. D.</td>
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<tr>
<td>O.</td>
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</tr>
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<tr>
<td>Pa.</td>
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</tr>
<tr>
<td>S. C.</td>
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</tr>
<tr>
<td>S. D.</td>
<td>4</td>
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<tr>
<td>Utah</td>
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<tr>
<td>Va.</td>
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<td>W. Va.</td>
<td>6</td>
</tr>
<tr>
<td>Wyoming</td>
<td>5</td>
</tr>
</tbody>
</table>

Total: 265 Reports 37

Publications of the United States Department of Agriculture are received and filed by Division; but if they could be filed in pamphlet cases and on shelves, as our station publications are, it is believed that they would be as often consulted by the staff and very probably prove as useful.

Of the publications of this Station, Vol. IV., Nos. 1 and 2, are out of print. Several of the later issues are nearly exhausted, owing to the increased demand for them. During the year, 1075 names of farmers in Tennessee have been added to the mailing list to receive bulletins as they are issued.

The mailing list now stands as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
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</thead>
<tbody>
<tr>
<td>Newspapers in Tennessee</td>
<td>154</td>
</tr>
<tr>
<td>Farmers in Tennessee</td>
<td>4872</td>
</tr>
<tr>
<td>Experiment Stations and U. S. Department of Agriculture</td>
<td>647</td>
</tr>
<tr>
<td>Exchanges</td>
<td>35</td>
</tr>
</tbody>
</table>

Total: 5709

Respectfully submitted,

(Signed) CHAS. H. WHITE,
Librarian.