

Historical Document
Kansas Agricultural Experiment Station

TWELFTH ANNUAL REPORT

OF THE

EXPERIMENT STATION

AT THE

Kansas State Agricultural College.

FOR FISCAL YEAR 1898-'99

MANHATTAN, KANSAS.
1900.

Historical Document
Kansas Agricultural Experiment Station

KANSAS STATE AGRICULTURAL COLLEGE,
MANHATTAN, KAN., January 29, 1900.

To his Excellency W. E. Stanley, Governor of Kansas:

DEAR SIR —I herewith transmit, as required by act of Congress approved March 7, 1887, the Twelfth Annual Report of the Experiment Station of the Kansas State Agricultural College, for the year ending June 30, 1899, including the financial statement for that period.

Respectfully,

E. R. NICHOLS,
Secretary Board of Regents.



KANSAS STATE AGRICULTURAL COLLEGE.

BOARD OF REGENTS, 1898-'99.	Beginning of term	Expiration of term
HON. E. T. FAIRCHILD, President Ellsworth, Ellsworth county.	Apr. 1, '99.	Mar. 31, '03.
HON. J. S. McDOWELL, Vice-president Smith Center, Smith county.	May 4, '99.	Mar. 31, '01.
HON. W. T. YOE, Treasurer. Independence, Montgomery county.	May 4, '99.	Mar. 31, '01.
HON. WM. HUNTER, Loan Commissioner Blue Rapids, Marshall county.	Apr. 1, '99.	Mar. 31, '03.
MRS. SUSAN J. ST. JOHN Olathe, Johnson county.	Apr. 1, '97.	Mar. 31, '01.
HON. CARL VROOMAN Parsons, Labette county	Jan. 7, '99.	Mar. 31, '01.
HON. J. M. SATTERTHWAITE Douglass, Butler county.	Apr. 1, '99.	Mar. 31, '03.
HON. C. B. HOFFMAN Enterprise, Dickinson county.	Apr. 1, '94.	May 4, '99.
HON. J. N. LIMBOCKER Manhattan, Riley county.	Apr. 1, '97.	May 4, '99.
HON. T. J. HUDSON. Fredonia, Wilson county.	Apr. 1, '97.	Mar. 31, '99.
HON. GEO. M. MUNGER Eureka, Greenwood county.	Aug. — '97.	Jan. 6, '99.
HON. WM. H. PHIPPS Belleville, Republic county.	May — '98.	Feb. 8, '99.
PRES. THOMAS E. WILL, Secretary officio		

EXPERIMENT STATION STAFF.

(Departments are arranged in alphabetical order.)

COUNCIL.

- THOS. E. WILL, A. M.,
Chairman *ex officio*.
- H. M. COTTRELL, M. S.,
Agriculurist.
- A. S. HITCHCOCK, M. S.,
Botanist.
- J. T. WILLARD, M. S.,
Chemist.
- E. E. FAVILLE, M. S. A.,
(Until December 31, 1898.)
Horticulturist and Entomologist.
- PAUL FISCHER, B. AGR., M. V. D.,
Veterinarian.
- W. H. PHIPPS, B. S., Secretary.

ASSISTANTS.

- F.C. BURTIS, M.S.*Assistant in Feeding and Field Work.
- J.C. HANEY B.S.Acting Assistant in Feeding and Field Work.
- D.H. OTIS, M.S.Assistant in Dairying.
- GEO. L. CLOTHIER, M.S.Assistant Botanist.
- ROBERT W. CLOTHIER, M.S.Assistant Chemist.
- PERCY J. PARROTT, A.M.†Assistant Entomologist.
- WM. L. HALL, M.S. †Assistant Horticulturist.
- C.W. PAPE, M.S.Assistant in Veterinary Department.

*Absent on leave since January, 1899.
 †In charge of the Entomological Department since January, 1899.
 ‡In charge of the Horticultural Department since January, 1899.



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EXPERIMENT STATION
 OF THE
KANSAS STATE AGRICULTURAL COLLEGE,
 MANHATTAN.

TWELFTH ANNUAL REPORT—FISCAL YEAR 1898-'99.
FINANCIAL STATEMENTS.

Report of the Treasurer.
 (July 1, 1898, to May 13, 1899.)

To the Board of Regents of the Kansas State Agricultural College:
 GENTLEMEN --Herewith is submitted my report of receipts and expenditures on account of the Experiment Station for the period between July 1, 1898, and May 13, 1899:

Received from the treasurer of the United States..	\$15,000.00
Received from cash sales of products..	313.00
Total	\$15,313.30
Approved vouchers Nos. 1 to 342, including credits..	11,168.74
Balance as shown by Secretary's record	\$4,144.56
Unpaid vouchers	\$987.97
March and April cash in Secretary's hands..	194.22
Paid to W. T. Yoe, Treasurer	\$4,938.31

C. B. HOFFMAN, *Treasurer.*

Report of the Treasurer.
 (May 13, 1899, to June 30, 1899.)

To the Board of Regents of the Kansas State Agricultural College:
 GENTLEMEN — Herewith please find a report of my expenditures and receipts on account of the Experiment Station for the period between May 13 and June 30, 1899:

Received from C. B. Hoffman, ex-Treasurer, cash	\$4,938.31
Received from C. B. Hoffman, ex-Treasurer, unpaid vouchers, \$987.97	987.97
March and April cash in College Secretary's hands	194.22
Balance as shown by Secretary's record	\$4,144.56
Received from cash sale of products	400.13
Total	\$4,544.69
Paid approved vouchers Nos. 343 to 456	4,544.69

W. T. YOE, *Treasurer.*



Report of the Secretary.

To the Board of Regents of the Kansas State Agricultural College:

GENTLEMEN —Herewith is submitted the following report of the financial affairs of the Experiment Station of the Kansas State Agricultural College for the year ending June 30, 1899, as prepared under directions from the United States Department of Agriculture. The several items of this account are covered by vouchers approved by the disbursing officer, certified by the Secretary, and allowed by the President and the Board of Regents:

Experiment Station, Kansas State Agricultural College, in account with the United States appropriation, 1898-'99:

	DR.	
To receipts from the treasurer of the United States as per appropriation for fiscal year ending June 30, 1899, as per act of congress approved March 2, 1887		\$15,000.00
	CR.	
By salaries		\$7,044.22
Labor		2,499.30
Publications		1,994.40
Postage and stationery		139.60
Freight and express		76.04
		29.73
Chemical supplies		83.25
Seeds, plants, and sundry supplies.		288.13
Feeding stuffs		258.67
Library		161.15
Tools: implements, and machinery.		126.83
Furniture and fixtures		217.83
Scientific apparatus		665.13
Live stock		1,029.88
Traveling expenses.		207.13
Contingent expenses		18.63
Building and repairs		160.08
Total		<u>\$15,000.00</u>

We, the undersigned, duly appointed auditors of the corporation, do hereby certify that we have examined the books and accounts of the Experiment Station, Kansas State Agricultural College, for the fiscal year ending June 30, 1899; that we have found the same well kept and classified as above, and that the receipts for the year from the treasurer of the United States are shown to have been \$15,000, and the corresponding disbursements \$15,000; for all of which proper vouchers are on file and have been by us examined and found correct, thus leaving no balance.

And we further certify, that the expenditures have been solely for the purposes set forth in the act of congress approved March 2, 1887.

(Signed) J. S. MCDOWELL,
E. T. FAIRCHILD,
W. T. YOE,
Auditors.

[SEAL.]

ATTEST: E. R. NICHOLS, *Custodian,*

Expenditures by Departments, 1898-'99.

	Farm.	Horticultural and Entomological.	Chemical.	Botanical.	Veterinary.	General.	Total.
By salaries.....	\$1800 00	\$1611 98	\$975 00	\$1125 01	\$956 86	\$575 37	\$7044 22
Labor.....	1111 65	1093 67	155 66	132 59	164 84	189 65	2848 06
Publications.....	854 52	420 59	271 26	243 50	86 00	303 85	2179 72
Postage and stationery.....	35 46	7 76	6 35	10 00	80 50	2 15	142 22
Freight and express.....	10 54	30 21	8 22	18 81	29 45	4 80	102 03
Heat, light, and water.....			29 73				29 73
Chemical supplies.....	6 21	14 45	44 74		17 85		83 25
Seeds, plants, and sundry supplies.....	35 90	151 79	30 48	62 32	56 75	20	337 44
Feeding stuffs.....	178 47				80 20		258 67
Library.....				145 57	58 42		203 99
Tools, implements, and machinery.....	71 48	32 30		8 80	14 25		126 83
Furniture and fixtures.....				146 83	71 00		217 83
Scientific apparatus.....	13 00	100 00	182 32		369 81		665 13
Live stock.....	949 78				80 10		1029 88
Traveling expenses.....	23 98	155 64		54 54	31 56		265 72
Contingent expenses.....	2 00			5 00	1 27	10 36	18 63
Building and repairs.....		160 08					160 08
Totals.....	\$5092 99	\$3778 47	\$1703 76	\$1952 97	\$2098 86	\$1086 38	\$15,713 43



Supplementary Statement.

DR.

To receipts from other sources than the United States for the year ending June 30, 1899: Farm and garden products \$713.43

CR.

Table with 2 columns: Description and Amount. Rows include Labor (\$348.76), Publications (185.32), Postage and stationery (2.62), Freight and express (25.99), Seeds, plants, and sundry supplies (49.31), Library (42.84), Traveling expenses (58.59), and Total (\$713.43).

Respectfully submitted.

LORENA E. CLEMONS.



REPORT OF THE COUNCIL.

To the Board of Regents of the Kansas State Agricultural College:

GENTLEMEN—We present, as required by law, the following outline of the Station work for the fiscal year ending June 30, 1899, leaving all detailed statements for bulletins already issued or to be issued on completion of experiments already under way.

An annual report and nine bulletins, covering 254 pages of valuable information, have been published, in editions as follows:

Table with 2 columns listing bulletin numbers (No. 81-89) and their respective copy counts (e.g., 33,000 copies, 10,000 copies).

The subjects treated are shown in the following:

Outline of Bulletins.

BULLETIN 81. September, 1898. Farm Department. 38 pp.

Feed and Care of the Dairy Cow.— Gives information in regard to fall calving; treatment of the cow before, at and after calving; best conditions for milk production; composition of the feed; succulence; variety; appetizing rations; feeding for quality of butter; 100 rations; feeding the individual; feeding to develop; value of the different feeds; buying feed; summer feeding; water; shelter, comfort, and kindness; salt; keeping records: individual cows.

BULLETIN 82. January, 1899. Horticultural and Entomological Department. 13 pp.

The Potato-stalk Weevil.— Giving a description of the food plants, habits and distribution of the weevil, and an account of the methods of controlling it. A number of plates illustrate the various stages of the insect and the plants upon which it subsists.

BULLETIN 83. April, 1899. Chemical Department. 16 pp.

Sugar Beets.— This bulletin gives the results of analyses of sugar beets in 1898, and includes a special study of them to ascertain the influence of locality, size of beets, thickness of planting, conditions of soil and culture, time of planting, and date of harvesting.

BULLETIN 84, April, 1899. Horticultural and Entomological Department. 31 pp.

Cold Storage for Fruit.— A description of methods of refrigeration of storage houses, with plans for a farm cold storage building, employing ice for the maintenance of the low temperature. Results are given on apples, pears, peaches plums, grapes, tomatoes, and cucumbers, kept at various temperatures in the

storage houses of Topeka and Kansas City. Methods of picking, packing and shipping fruit for cold storage are discussed, as well as matters anent the production of fruit of such quality as will keep well in cold storage.

BULLETIN 85. April, 1899. Botanical and Farm Departments. 16 pp.

Investigations of the Growth of A Alfalfa in Kansas. — Gives interviews with leading Kansas alfalfa growers; feeding value of alfalfa; pasturing alfalfa; failure to get a stand; favorable conditions of growth; feeding notes.

BULLETIN 86. June, 1899. All departments. Comprises Press Bulletins Nos. 1 to 34. 62 pp. (See below.)

BULLETIN 87. April, 1899. Botanical Department. 30 pp.

Native Agricultural Grasses of Kansas. — Contains descriptions of twenty-nine species of forage grasses, accompanied by maps showing distribution in the state, and cuts of most of the species, illustrating the habit of the plant.

BULLETIN 88. May, 1899. Farm Department. 8 pp.

Keeping Milk in Summer. — Describes structure of a cheap milk house and cheap methods of handling milk which enabled the College dairy to deliver milk in good condition forty-eight hours old to the Manhattan creamery during the hot weather of July and August.

BULLETIN 89. June, 1899. Chemical Department. 22 pp.

Soil Moisture. — This bulletin details experiments extending through two years in respect to the influence of fertilizers on the moisture of soils in pots and in plats; also the effect of various kinds of tillage on the conservation of soil moisture.

Press Bulletins, 1898-'99, Mimeograph Bulletins, and Weather Reports.

In addition to the regular bulletins outlined above, the Station has issued forty-five press bulletins. This is a new feature, the first one being printed in August, 1898. These bulletins are designed to be brief, timely and readable expositions of topics which may not yet be fully worked out for publication in a regular bulletin, or may be too fragmentary for that form, or they may summarize in a popular way a more extensive publication; in general, they embody results of our own experimentation, though at times containing other pertinent matter. These press bulletins have been sent to the newspapers of the state and to many outside of the state, and have been received with much favor; a number of them have been sent to our entire mailing list. The interest in them and their value seemed to warrant putting them in more permanent form, and the first thirty-four have been collected, and reprinted as Bulletin 86. A complete list, with the name of the department issuing each, is subjoined.

A large number of short articles or paragraphs, consisting of mat-

ter similar to the press bulletins, have been multiplied by means of the mimeograph, and distributed to a selected list of the agricultural papers of the country. They have been used with a freedom very gratifying to their authors, but due credit is not always given to the Station.

A monthly summary of the weather, including a comparison with the record for the preceding forty years, and general averages for forty-one years, has also been issued. This has been prepared by Prof. E. R. Nichols, of the Department of Physics, and has been furnished the press the next day after the completion of the month.

LIST OF PRESS BULLETINS.

<i>No.</i>	<i>Title.</i>	<i>Department issuing.</i>
1.	Wheat Experiments	Farm.
2.	Keeping Milk in Hot Weather	Farm.
3.	The Fringed-wing Apple-bud Moth	Horticulture and Entomology.
4.	Soil Moisture and Soil Stirring.	Chemical.
5.	Blackleg*	Veterinary.
6.	The Sand Plum	Horticulture and Entomology.
7.	Kafir-corn for Fattening Pigs *	Farm.
8.	Some Reasons why Fruit Does not Set	Botanical.
9.	The Peach Twig-borer*	Horticulture and Entomology.
10.	Fall Preparation for Alfalfa Seeding *	Farm.
11.	Celery	Horticulture and Entomology.
12.	The Balanced Ration	Farm.
13.	Seed Breeding	Botanical.
14.	The Fruit-tree Bark-beetle.	Horticulture and Entomology.
15.	Kansas Sugar Beets for 1898	Chemical.
16.	<i>Actinomyces (Lump-jaw, Big-jaw).</i>	Veterinary.
17.	Hardy Ornamental Shrubs	Horticulture and Entomology.
18.	Notes on Weeds	Botanical.
19.	The Potato-stalk Weevil	Horticulture and Entomology.
20.	Possibilities in Corn Improvement	Chemical.
21.	Winter Protection of Peach Buds	Horticulture and Entomology.
22.	Grazing Grasses of Western Kansas	Botanical.
23.	The Spring Canker-worm	Horticulture and Entomology.
24.	A New Crop for Kansas Farmers (Soy-beans).	Farm.
25.	Alfalfa Hay for Fattening Hogs.	Farm.
26.	<i>Toenia fimbriata</i> (Fringed Tape-worm)	Veterinary.
27.	Sugar Beet Experiments for 1899	Chemical.
28.	Treatment of Winter-injured Trees	Horticulture and Entomology.
29.	Milking Scrub Cows	Farm.
30.	Lice on Animals*	Veterinary.
31.	Potato Scab	Botanical.
32.	Blackleg (A)*	Veterinary.
33.	Blackleg (B)*	Veterinary.
34.	Get Ready for the Drought	Farm.
35.	Dysentery in Calves and Other Young Animals,	Veterinary.
36.	Experiments with Swine-plague or Hog-cholera,	Veterinary.

*Out of print.



<i>No.</i>	<i>Title.</i>	<i>Department issuing</i>
37.	Kafir-corn, Alfalfa Hay and Soy-beans for Pork*.....	Farm.
33.	What is a Digestion Experiment?	Chemical.
39.	Skim-milk Calves	Farm.
40.	Orchard Cultivation *	Horticulture and Entomology.
41.	Digestion Experiment with Alfalfa Hay.	Chemical.
42.	To Rid the House of Flies.	Horticulture and Entomology.
43.	Selection of Seed Wheat.	Botanical.
44.	The Profitable Strawberry Bed	Horticulture and Entomology.
45.	Early Plowing and Moisture Conservation. . . .	Chemical.

Other Work.

FARM DEPARTMENT.—The chief line of work for the year in the Farm Department has been the production of drought-resisting crops and the developing of best methods of feeding these crops for the production of beef, milk, and pork. Kafir-corn, soy beans and alfalfa have been the crops experimented with. We have had good success in developing a practical field method for inoculating the soil with the root-tubercle-forming microbes of the soy bean. Feeding experiments have been made with alfalfa hay, soy beans and Kafir-corn for feeding dairy cows, fattening hogs and calves, and with skim-milk for calves and for hogs.

Experiments have been made in keeping milk sweet during the summer, with the result that during the hot weather of July and August we were able to deliver milk sweet to the creamery when forty-eight hours old, with an equipment that can be afforded by any farmer in the state. As rapidly as results have been secured, the information has been published, both through the newspapers and through bulletins. Three pamphlet bulletins have been issued by the Farm Department during the year, with a total of 63,000 copies. The department has also published eleven press bulletins, with a total of 86,000 copies.

Mr. F. C. Burtis, assistant in field and feeding experiments, was granted, at his own request, a leave of absence from February 1, to June 30, and Mr. J. G. Haney took up this line of work.

BOTANICAL DEPARTMENT.— The plant-breeding experiments mentioned in the report for the previous year have been continued. The crossed wheat of 1898 produced 3681 grains. These grains were planted in small pots, and afterwards transplanted in the fall. The young plants were surrounded by a zone of wheat for protection. The severe winter killed many of the plants. The survivors were carefully tended and produced a fair crop of seed. Considerable

* Out of Print.

difficulty was experienced in combating the chinch-bug. Kerosene emulsion was freely used and the wheat was saved, though more or less injured, These seeds will be planted in the fall of 1899 and will be used to form the basis for selection in the future.

In the spring of 1898 a number of samples of corn were obtained from growers in various parts of the state. The Chemical Department determined the amount of nitrogen in these samples and thirty-three were chose for planting. In order to induce variation, these were crossed with each other in as many combinations as time and help would permit. Since some sorts are more suited to upland conditions and others to bottom land, a part of each sample was planted on an upland field on the College farm, and a part on rented town lots in bottom land. The results of the crosses were planted in a like manner this spring, 279 samples upon the College farm and 302 samples upon the bottom land. These will be self-fertilized this summer, a part of each sample with pollen from the same stalk, and a part with pollen from different stalks of the same sort.

In addition to the experiments in plant breeding, the department maintains a grass garden, in which our native and introduced grasses are studied with a view of adapting them to our conditions. A number of plants, such as millet, oats, and buckwheat, which have been sent out by the United States department of agriculture, have been sown, and their adaptability to our conditions observed.

CHEMICAL DEPARTMENT.—In the work in connection with seed breeding, a series of analyses have been made to see if there is a relation between the specific gravity and the percentage of protein. These experiments have not yet reached definite results, and will be continued. Other work in this general line is in progress in cooperation with the Botanical Department. The work on soil moisture has been continued, and also that upon sugar beets, in cooperation with the farmer of the state. Some soil analyses are in progress designed to show the effect of the continuous culture of wheat as compared with a rotation of crops. Analyses incident to digestion experiments are also in progress, and it is designed to give this feature of our investigations greater prominence in the future.

HORTICULTURAL AND ENTOMOLOGICAL DEPARTMENT.—The department has given much attention to the matter of fruit improvement. So broad is the field that the work has been pursued along several distinct lines. The seeds obtained by crosses made last year among the peaches and cherries have been planted. Other crosses have this year been made on plums and cherries, the effort being to secure the blending of good qualities of distinct varieties. Seeds of many varie-

ties of the sand plum have been collected and planted, with the aim of improving the quality of the fruit by cultivation, crossing, and selection, until valuable varieties are produced for the arid portions of the state. Efforts have been in progress for two years to improve the strawberry by cultivation and bud selection.

We have endeavored to enlist the interest of the fruit-growers of the state in the matter of fruit improvement. They have been urged to observe the conduct of promising seedlings and bud variations. A generous response has been given. In consequence we have received many of these new fruits, to be tested; and the fruit-growers themselves are testing. On the whole, our work in fruit improvement has been most satisfactory.

We have to report a very successful year's work in the investigation of the preservation of fruits and vegetables by cold storage. The experiments begun last year have been carried out. A bulletin giving the results of the same was issued in April. A test of methods of growing celery has been carried on, and the results obtained were published in a press bulletin on "Celery."

Several methods of cultivating and mulching potatoes have been under test and valuable results were obtained. These are on file, but lack of funds has prevented publication. Methods of orchard cultivation and crops for green manuring the soil of the orchard have been under investigation. A partial report of results was made in a press bulletin on "Orchard Cultivation." Variety tests have been continued in orchard and small fruits, Variety tests in vegetables have proved year after year more unsatisfactory and impracticable and have, therefore, been largely abandoned.

The Entomological Department has continued the investigations as outlined in the preceding report. During the year the experiments with the potato-stalk weevil were brought to a close, and the results published in Bulletin No. 82. The alfalfa worm and the horn-fly have, for the past season, received considerable attention, with the view of devising better methods for their control. In the experiments with the latter, tests were made of the various proprietary mixtures offered for sale upon the market; original mixtures were devised and tested, and a thorough trial made of miscellaneous remedies recommended in various publications, more particularly in reports from other stations. A bulletin embodying the results of this experiment will soon be forthcoming.

VETERINARY DEPARTMENT.—The work of the Veterinary Department consisted in a continuation of experiments begun in 1897-98, viz.: (1) Tuberculin tests of the College herd and newly acquired milch cows. (2) Press bulletins issued on the following subjects:

Blackleg, tapeworm in sheep; *actinomycosis*; diarrhea in calves; swine-plague. (3) Roup in poultry and remedies for same. (4) Bacteriological examinations of milk and well-water. (5) Protective inoculation against swine-plague. (6) Protective inoculation against blackleg in cattle.

Blackleg vaccine has been prepared in the veterinary laboratory and over 30,000 double doses of vaccine have been distributed among stockmen. This was sufficient to protect from 30,000 to 60,000 head of cattle against the ravages of blackleg, which disease has been found to be alarmingly prevalent in nearly every county in the state. Extensive mortality statistics have been gathered, and from these a conservative estimate places the saving to cattle owners by the use of Experiment Station vaccine at the figure of \$60,000 (during the last six months). The object of the experiment is to discover the best methods of manufacturing reliable vaccine, the proper method and place of inoculation (which latter has been found to be of great importance), whether single or double vaccine is to be preferred, etc.

An extensive bulletin on the subject of blackleg will soon be published.

The Staff.

Secretary Graham, after many years of service, severed his connection with the Station and College at the close of the summer vacation, to accept a position in the Central Business College, at Sedalia, Mo. Professor Faville, of the department of horticulture and entomology, left at the Christmas holidays to accept the presidency of the National Farm School, at Doylestown, Pa. Mr. F. C. Burtis, assistant in feeding and field work, retired on leave of absence in January, and was succeeded by Mr. J. G. Haney as acting assistant in the same work. Mr. George L. Clothier, assistant botanist, spent about four months in the winter and spring in Cornell University in the study of seed breeding, during which time Mr. J. M. Westgate served as acting assistant botanist.

General Statement.

During the last year the Station has become much more thoroughly known, not only in this state, but in the country at large. This has been due, largely, to the diversification of our publications. It is the constant effort of the staff to make its investigations not only rigorously accurate scientifically, but to choose such lines of investigation as will lead to results of practical benefit to the farmer. Some of these investigations will require years for fruition; others are expected to yield immediate returns. That our efforts are appreciated is shown by numerous commendatory letters received, as well as by the comments of the press.

The Station mailing list has increased greatly during the last year, and ought to increase much more, but this increase carries with it a corresponding diminution in the funds available for experimentation. There is also a constant growth in the Station correspondence, which necessarily requires the diversion of funds to the payment of clerical force. This correspondence now amounts to about 10,000 letters per annum. Applications for advice, information and publications are received from all parts of the United States and not infrequently from foreign countries. Thus far, while not advertising to do so, we have been sending our bulletins to all applicants, regardless of residence. The Station being supported by a federal appropriation, it seems fitting that no citizen of our country should be denied the benefit of its results.

Respectfully submitted.

THOS. E. WILL.
H. M. COTTRELL.
A. S. HITCHCOCK.
J. T. WILLARD.
PAUL FISCHER.