Historical Document
Kansas Agricultural Experiment Station

THIRTEENTH ANNUAL REPORT

OF THE

EXPERIMENT STATION

AT THE

Kansas State Agricultural College.

FOR FISCAL YEAR 1899-1900,

WITH AN

Index to Bulletins 90 to 98.

MANHATTAN, KANSAS,
1900.

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KANSAS STATE AGRICULTURAL COLLEGE,
MANHATTAN, KAN., November l, 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 Thirteenth Annual Report of the Experiment Station of the Kansas State Agricultural College, for the year ending June 30, 1900, including the financial statement for that period.

Respectfully,

E. R. NICHOLS,
Secretary Board of Regents.

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KANSAS STATE AGRICULTURAL COLLEGE.

BOARD OF REGENTS.

Hon. E. T. FAIRCHILD, President,
Ellsworth, Ellsworth county.

Hon. J. S. McDOWELL, Vice-president,
Smith Center, Smith county.

Hon. W. T. YOE, Treasurer,
Independence, Montgomery county.

Hon. WM. HUNTER, Loan Commissioner,
Blue Rapids, Marshall county.

Hon. MRS. SUSAN J. ST. JOHN,
Olathe, Johnson county.

Hon. J. M. SATTERTHWAITE,
Douglass, Butler county.

Hon. CARL VROOMAN,
Parsons, Labette county.

President E. R. NICHOLS, Secretary ex officio.

EXPERIMENT STATION STAFF.

COUNCIL.

E. R. NICHOLS, A. M.,
Chairman ex officio.

J. T. WILLARD, M. S.,
Chemist and Director.

A. S. HITCHCOCK, M. S.,
Botanist.

PAUL FISCHER, B. AGR., M. V. D.,
Veterinarian.

H. M. COTTRELL, M. S.,
Agriculturist.

E. A. POPENOE, A. M,,
Horticulturist and Entomologist.

LORENA E. CLEMONS, B. S., Secretary.

ASSISTANTS.

D. H. OTIS, M. S	Assistant in Dairying.
PERCY J. PARROTT, A. M	Assistant Entomologist
R. W. CLOTHIER, M. S.	Assistant Chemist.
J. M. WESTGATE, M. S	Assistant Botanist.
ALBERT DICKENS, B. S.	Assistant Horticulturist.
J. G. HANEY, B. S	Assistant in Feeding and Field Work.
A. T. KINSLEY, B. S	Assistant in Veterinary Department.

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EXPERIMENT STATION

OF THE

KANSAS STATE AGRICULTURAL COLLEGE,

MANHATTAN.

THIRTEENTH ANNUAL REPORT–FISCAL YEAR 1899-'00.

FINANCIAL STATEMENTS.

Report of the Treasurer.

July 1, 1899, to June 30, 1900.

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, 1899, and June 30, 1900:

Received from the treasurer of the United States	$15,000.00
Received from cash sales of products	7,002.05
Total	$22,002.05
Approved vouchers Nos. 1 to 449, including credits	21,393.66
Balance	$608.39

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, 1900, 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.

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Experiment Station, Kansas State Agricultural College, in account with the United States appropriation, 1899-1900.

DR.

To receipts from the treasurer of the United States as per appropriation for fiscal year ending June 30, 1900, as per act of congress approved March 2, 1887	$15,000.00

CR.

By salaries	$6,931.59
Labor	3,556.68
Publications	340.03
Postage and stationery	264.16
Freight and express	160.43
Heat, light, and water	91.09
Chemical supplies	187.35
Seeds, plants, and sundry supplies	408.52
Fertilizers	9.55
Feeding stuffs	736.31
Library	267.64
Tools, implements, and machinery	70.26
Furniture and fixtures	79.95
Scientific apparatus	209.84
Live stock	1,195.49
Traveling expenses	76.98
Contingent expenses	11.64
Building and repairs	402.49
Total	$15,000.00

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, 1900; 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) W. T. YOE,
[SEAL.] E. T. FAIRCHILD,
J. S. MCDOWELL,
ATTEST: E. R. NICHOLS, *Custodian*, *Auditors.*

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Supplementary Statement.

DR.

To receipts from other sources than the United States for the year ending June 30, 1900: Farm and garden products	$7,002.05

CR.

Salaries	$658.51
Labor	451.49
Publications	36.87
Postage and stationery,	9.95
Freight and express	96.05
Chemical supplies.	5.10
Seeds, plants, and sundry supplies	58.14
Feeding stuffs	1,072.82
Library	10.27
Scientific apparatus	68.70
Live stock	3,918.46
Contingent expenses	7.30
Total	$6,393.66
Balance	608.39
Grand total	$7,002.05

Respectfully submitted.

LORENA E. CLEMONS.

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Expenditures by Departments, 1899–1900.

Items.	Farm.	Horticultural and entomological.	Chemical.	Botanical.	Veterinary.	General.	Total.
By salaries	$1,940 00	$1,556 10	$1,485 00	$1,149 00	$900 00	$560 00	$7,590 10
Labor	1,352 57	1,150 86	478 63	370 98	291 32	363 81	4,008 17
Publications	149 38	34 14	10 80	33 86	4 15	144 57	376 90
Postage and stationery	31 75	16 50	8 89	16 48	78 75	121 74	274 11
Freight and express	110 47	18 38	33 04	7 90	54 75	31 94	256 48
Heat, light, and water	.....	.....	58 32	.....	32 77	.....	91 09
Chemical supplies	.....	33 79	78 02	.....	80 64	.....	192 45
Seeds, plants, and sundry supplies	60 29	123 51	81 43	113 72	64 68	23 03	466 66
Fertilizers	.....	9 55	.....	.....	.....	.....	9 55
Feeding stuffs	1,792 40	.....	.....	.....	16 73	.....	1,809 13
Library	.....	22 94	37 00	182 68	31 29	4 00	277 91
Tools, implements, and machinery	69 86	.....	.....	40	.....	.....	70 26
Furniture and fixtures	.....	18 10	.....	.....	53 00	8 85	79 95
Scientific apparatus	.....	15 63	64 91	.....	198 00	.....	278 54
Live stock	5,113 95	.....	.....	.....	.....	.....	5,113 95
Traveling expenses	42 97	21 74	.....	.....	12 27	.....	76 98
Contingent expenses	.....	.....	.....	5 00	1 64	12 30	18 94
Building and repairs	396 00	2 40	.....	4 09	.....	.....	402 49
Totals	$11,059 64	$3,023 64	$2,336 04	$1,884 11	$1,819 99	$1,270 24	$21,393 66

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REPORT OF THE COUNCIL.

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

GENTLEMEN — We present, to accompany the financial statements, the following account of the Station work for the fiscal year ending June 30, 1900, as a part of the annual report of the Station to the governor required by law.

Changes in Organization.

Owing to the changed relation of the officers of the College and the Experiment Station to their duties, by reason of the increased demands upon their personal attention caused by the great growth of the College during the time that has elapsed since the organization of the Station, it has been apparent for some time that advantageous changes might be made in the organization of the Station in respect to its general business. With this fact in view, the following recommendation of the Council was presented to the Board of Regents, and was adopted by them January 18, 1900:

The Experiment Station shall be managed by a Council, to consist of the president of the College, who shall be chairman *ex officio,* an agriculturist, a botanist, a chemist, an entomologist and horticulturist, a veterinarian, and such others as the Board of Regents may designate. A member of the Council, named by the Board, shall be styled director. He shall be the executive officer. of the Station, and as such shall attend to its general business and correspondence, the printing, binding and distribution of its publications, and such other matters as the Board or Council may direct, but in all things shall be subject to the action of the council. All experiments shall be undertaken with the advice and consent of the Council, but the details of their performance shall be under the control of the departments in charge of them respectively. The Council shall hold regular monthly meetings, and such special meetings as may be necessary.

The provisions above set forth are those which have governed the action of the Council throughout the year, even before their formal adoption. The changes in administration involved thereby are detailed in the report of the general department.

The Staff.

The Station Council has remained nearly the same as last year. President Will's connection with the College ceasing, Professor Willard, chemist of the Station, was made chairman of the Council July 13, 1899. Upon recommendation of the Council, the Board of Regents, January 18,1900, revived the office of director, and appointed Profes-

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sor Willard thereto. At the same time the President of the College was designated to be a member of the Council, and its chairman. In accordance therewith, Professor Nichols, Acting President, and later President, has officiated in the capacity named since that date. The vacancy caused by the resignation of Professor Faville was filled by the appointment of Prof. E. A. Popenoe to the position of horticulturist and entomologist, from July 1, 1899. Professor Popenoe had been a member of the Council from the establishment of the Station until 1897. Miss Lorena Clemens succeeded Mr. W. H. Phipps as Secretary of the College and of the Experiment Station July 1, 1899.

In the force of assistants, J. M. Westgate succeeded Geo. L. Clothier as assistant botanist July 1. July 12, Acting Assistant J. G. Haney was made assistant in feeding and field work, and Albert Dickens was appointed to succeed W. L. Hall as assistant horticulturist. January 20, 1900, A. T. Kinsley was appointed assistant in the veterinary department.

Publications.

The publications of the Station during the year consist of the Twelfth Annual Report, Bulletins 90 to 98, Press Bulletins 46 to 70, a summary of the weather observations each month, and a few mimeograph bulletins. The following is an outline of the report and bulletins and a list of the press bulletins, showing the department issuing the publication, the number of copies printed, and date of issue:

Annual Report.

Twelfth Annual Report, February, 1900, 3000 copies. This consists of the financial statements, an outline of the bulletins, and a list of the press bulletins issued during the year, reports of work in progress, and a general statement concerning the progress and condition of the Station. A list of the publications of the Station to the end of the fiscal year is appended.

Bulletins.

BULLETIN 90. January, 1900. Farm Department. 20,000 copies.

Alfalfa in Eastern Kansas.--This bulletin details the method of starting alfalfa in regions that have become foul with weeds, and general directions for treatment of the plant.

BULLETIN 91. February, 1900. Veterinary Department. 20,000 copies.

Swine-plague. —Discusses the principles of protective inoculation as a preventive of disease; the outbreak of swine-plague in the College herd, its causes and progress; whether or not the virus used in protective inoculation can produce the disease; the difficulty of detecting the presence of swine-plague in its early stages, and the value of an observation of the temperature of suspected

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animals; the danger attending the purchase of miscellaneous lots of swine and bringing them together.

BULLETIN 92. March, 1900. Farm Department. 30,000 copies.

A New Drought-resisting Crop—Soy—beans.— Gives a description of soy-beans, methods of planting, culture, and harvesting; discusses their value in feeding, and outlines a number of experiments in which they formed a part of the ration fed; recommends them for trial because of their effect on the soil and the high protein content of the crop.

BULLETIN 93. March, 1900. Farm Department. 30,000 copies.

Kafir-corn. — Discusses this crop in all its aspects; varieties, planting, cultivation, harvesting, yield, resistance to drought, composition ; feeding value for swine, dairy cows, calves, horses, and sheep; Kafir-corn as a hay crop; danger of second growth; objections to it; regions where it should be grown.

BULLETIN 94. April, 1900, Chemical and General Departments. 25,000 copies.

Sugar Beets, 1899; The Station Publications, with Partial Index. — This bulletin gives the results of the analyses of sugar beets grown in 1899 in cooperation with the chemical department. It also contains a complete list of all the publications of the Station to date, and an index to the more important subjects treated therein.

BULLETIN 95. April, 1900. Farm Department. 25,000 copies.

Fattening Hogs with Drought-resisting Crops.— Gives the details of feeding thirty-four lots of hogs, in which Kafir-corn, soy-beans or alfalfa were included in the rations in nearly every case; demonstrates the possibility of producing pork economically with feeds that can be produced even in the drier parts of the state.

BULLETIN 96. May, 1900. Farm Department. 20,000 copies.

Soil Inoculation *for Soy-beans.--An* account of a considerable number of experiments in the production of tubercles on the roots of soy-beans by inoculating with earth and with earth extracts. Some of these were in pots or small plats, others on a field scale. Drilling in the beans and with them inoculated soil by means of a fertilizer attachment was found to be the best means of inoculating the crop.

BULLETIN 97. May, 1900. Farm Department, 30,000 copies.

Skim-milk Calves.—A detailed account of highly successful efforts to raise calves on skim-milk, thus enabling the fresh milk to be used in butter-making without diminishing the value of the calves.

BULLETIN 98. May, 1900. Horticultural and Entomological Department. 20,000 copies.

Some Scale-insects upon Kansas Grasses. —Gives a brief account of the scale-insects in general, with a more extended popular description of the grass-inhabiting forms, now first recorded from Kansas, and for one important genus, now first recorded from the United States. This account is followed by a list of the known species from the United States, a list of Kansas species, with the grasses infested by them, and analytical tables and descriptions of new species. The paper is illustrated by six plates, containing twenty-five original figures.

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Press Bulletins.

No. 46. September 25, 1899. Farm Department, 16,500 copies.
Soy-beans.

No. 47. October 24, 1899. Botanical Department. 2500 copies.
Awnless Brome-grass.

No. 48. October 31, 1899. General Department. 2500 copies.
The Kansas Experiment Station.

No. 49. November 7, 1899. Entomological Department. 2000 copies.
A Horn-fly Trap Experiment.

No. 50. November 14, 1899. Veterinary Department. 2000 copies.
Infectious Abortion in Cattle.

No. 51. November 28, 1899. Farm Department. 3000 copies.
Alfalfa in Eastern Kansas.

No. 52. December 1, 1899. Botanical Department. 2000 copies.
Some Nitrogenous Forage-plants.

No. 53. December 5, 1899. Chemical Department. 2000 copies.
Experiments with Sugar Beets in 1899 and 1900.

No. 54. December 26, 1899. Farm Department. 3000 copies.
Kafir-corn.

No. 55. January 2, 1900. Botanical Department. 2700 copies.
Plant Breeding by Bud Selection.

No. 56. January 9, 1900. Chemical Department. 3000 copies.
Digestion Experiments with Kafir-corn Stover and Kafir-corn Meal.

No. 57. January 23, 1900. Veterinary Department. 5500 copies
Protective Inoculation against Blackleg in Cattle.

No. 58. January 30, 1900. Botanical Department. 4000 copies.
Questions about Forage-plants.

No. 59. February 6, 1900. Botanical Department, 3500 copies,
How to Test the Vitality of Garden Seeds.

No. 60. February 9, 1900. Farm Department. 3600 copies.
Gophers and Crab-grass versus Alfalfa.

No. 61. February 13,1900. Horticultural Department. 3500 copies.
Salsify, or Oyster Plant.

No. 62. March 6, 1900. Farm Department. 4500 copies.
Tame Games for Kansas.

No. 63. March 6, 1900. Farm Department. 4500 copies.
Bromus Inermis.

No. 64. March 13, 1900. Botanical Department, 3500 copies.
Prevention of Grain Smuts.

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No. 65. March 20, 1900. Entomological Department. 3500 copies.
Horn-fly Remedies.

No. 66. March 27, 1900. Horticultural Department. 3500 copies.
Causes of Failure in Spraying.

No. 67. April 24, 1900. Botanical Department. 3400 copies.
The Cultivated Catalpas.

No. 68. May 14, 1900. Entomological Department. 3400 copies.
The Buffalo Tree-hopper.

No. 69. June 12, 1900. Botanical Department. 3600 copies:
The Cultivated Millets.

No. 70. June 26, 1900. Botanical Department. 3600 copies.
Botanical Notes on Wheat and Spelt.

Work of the Departments.

FARM DEPARTMENT. — The chief line of work for the year in the Farm Department has been the continuation of the production and feeding of drought-resting crops. In this line, seventy acres of soy-beans were raised, and part of the crop fed to dairy cows, calves, hogs, and fattening steers. Fifty acres of Kafir-corn were raised and fed.

Eighty acres of soy-beans and ten acres of cow-peas are now growing. Soy-beans have been sent to sixty-five counties in the state, and have been planted by 200 farmers. This will give a test of the value of soy-beans for every condition of soil and climate found in the state. Forty-six acres were inoculated in 1899 with the bacteria that form tubercles on the roots of soy-beans, and this inoculated soil for soy-beans has been sent to thirty-one farmers.

Eighty head of steers were fattened in an experiment to test methods of fattening steers without hogs following. Four hundred and thirty-five pigs were purchased for feeding experiments with drought-resisting crops. They were inoculated to prevent cholera, but 369 died. In January, two years' work was completed in fattening hogs with drought-resisting crops, 326 head having been fattened in these experiments. Eighty-one calves were fed during the year in the tests of skim milk, whey, hay tea, and whole milk.

Trials of soiling dairy cows were made with twenty-one cows.

As fast as work has been completed, bulletins have been issued giving the results of experiments, and details are unnecessary in this report.

The members of the farm force spent most of the fall of 1899 in attending farmers' institutes, attending 134 meetings. The meeting face to face with the farmers, and the personal presentation at these institutes of our experimental work, had the effect of inducing hundreds to test our methods who had not previously been influenced through bulletins, and created a large demand for the bulletins.

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BOTANICAL DEPARTMENT.— The experimental work of the Botanical Department of the Experiment Station includes work along the two lines, plant-breeding and forage-crops. In plant-breeding, an attempt is being made to improve our varieties of wheat, corn, soy-beans, Kafir-corn, and alfalfa. The experiments with wheat and corn have been carried on for three years. A large number of crosses were made in 1898 between the more desirable of the varieties of wheat grown in the plats that season. The results of the crosses, several hundred in number, were planted and carefully watched. The second generation of these crosses is under observation this season. During the present season a second series of crosses has been made, 850 heads in all, the object being to cross our best Kansas varieties--Turkey, Zimmerman, Red May, and Currel—with several promising Russian varieties sent to the Station by the United States department of agriculture. The results of these crosses will be reported upon later. Besides these crosses, ninety-eight varieties of wheat in plats were under observation, including samples received from successful wheat growers in the wheat belt of the state. The best heads of each variety were saved to continue the experiment the coming season. It is noticeable that the crosses show considerable superiority in general appearance over the neighboring varieties on the same soil. The crosses are being continued by carefully selected heads,

Several hundred crosses of corn were made in 1898 and the results have been under observation for two seasons. An attempt is being made to produce varieties richer in protein. With this end in view, the Chemical Department, has determined by analysis the amount of protein in the crosses produced. During this season it is proposed to select and breed from those crosses which show the greatest proportion of protein. By successive selection and crossing, is is hoped that the per cent. of nitrogen can be materially increased. Three hundred and ninety-four samples of corn were planted this season in this series of experiments.

Soy-beans, Kafir-corn and alfalfa are being improved by seed selection, looking toward varieties showing better qualities than those we now possess. In addition to the grains mentioned, the department had on trial in plats eleven varieties of barley, two of emmer, two of rye, seven of broom-corn millet, and twelve of timothy. The last were received from Professor Hopkins, of West Virginia Experiment Station, and have already been bred for several generations. Some of these timothy plants are of superior merit and will be selected for future breeding.

To aid the work in forage-plants, the Botanical Department has established a grass garden, in which our native grasses, together with a large number of cultivated grasses and forage-plants, are grown in

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plats. These plats are observed and noted, with a view of determining the adaptability of the different sorts to our conditions. Those varieties which give promise of success will be tried on a large scale by the Farm Department. An important series of experiments is under way to improve our valuable native grasses, such as bluestem and grama-grass, and produce varieties which will bear an abundance of fertile seed, thus enabling them to be grown from seed, as our common cultivated forage grasses. In the forage-plant exhibit, there are 212 kinds of native and cultivated grasses, and other forage-plants such as rape, vetches, spurry, Australian salt-bush, lupines, clovers, and various other legumes. Several of these samples were obtained of the United States department of agriculture for trial, being introduced from the old world.

As none of the work of the Botanical Department was sufficiently completed during the year to warrant a report, no bulletins were issued. A report on our cultivated forage plants is under way, however, and will be issued at an early date. Eight press bulletins were issued at intervals during the year,

CHEMICAL DEPARTMENT.— The Chemical Department has completed a set of analyses of the soil at different depths from the land upon which wheat had been grown for eighteen consecutive years, and from an adjacent field which had produced a variety of crops. These will be published soon, and throw some interesting light on the question of the soil exhaustion. The experiment in seed breeding of corn, in cooperation with the Botanical Department, has taken the greater part of the time and means of the department. Over 500 determinations of nitrogen in as many specimens of corn are in progress. These specimens are mainly crosses made by the Botanical Department, and the analyses will be used to guide the future work in selection and fixing of varieties. Owing to the destruction of the laboratory by fire May 31, 1900, these analyses have been materially delayed, and the botanical work will be somewhat hampered from this cause. The analyses incident to a number of digestion experiments have been made, and several more conducted. Unfortunately, the samples obtained in an experiment with sorghum hay and in a repetition of an experiment with prairie hay were lost in the fire. A bulletin will be issued soon giving an account of all of the digestion experiments completed. The department has continued to cooperate with the United States department of agriculture in the distribution of sugar-beet seed to farmers of the state requesting it, and has analyzed the beets produced last season. The results have been published in the bulletin. The present year, parties interested in the question have engaged a considerable number of farmers in the valley of the Kansas river to grow experimental plats under the direction of

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an expert, the Station supplying them with the seed and analyzing the product. It is believed that this will be the best test yet made of the capacity of our state for sugar-beet production,

HORTICULTURAL AND ENTOMOLOGICAL DEPARTMENT.—The following outline indicates the chief directions of the work in this department:

In the horticultural division, the collections of varieties have been maintained and extended; an orchard of several hundred selected seedlings of the sand plum *(Prunus watsoni)* has been set out on the sandy lands of the Kansas river, and a smaller collection, for comparison, in the clay loam of the College grounds; other native fruits, with a view to their study and improvement, have been grown from seed or propagated from trees of marked superiority in fruit, from various localities: extended observations were made upon fruiting varieties of the plum for early publication in bulletin form; an extended list, from foreign sources, of vegetables not recognized in home gardens, has been grown to learn their value here; the improvement of esculent roots by careful selection of plants for seed has been undertaken; cultural tests have been made in various lines.

In the division of entomology, important studies of the scale-insects inhabiting grasses, and extended collections of specimens from various localities have been made; the life-history of the grain-aphis has been studied; various proprietary insecticides have been given comparative trial; the destruction of the codling-moth has been the subject of careful reinvestigation; the protection of the cabbage from insects has been made a matter of extended experiment; and numerous minor subjects have been given attention and made a matter of record for future use.

VETERINARY DEPARTMENT.— During the year closing June 30,1900, the work of the Veterinary Department of the Experiment Station consisted in the continuation of work begun in previous years and of some new work. The manufacture and distribution of blackleg vaccine for protective inoculation was continued throughout the entire year. Two kinds of vaccine, double and single — the first requiring two, the latter one application— were manufactured and distributed.

It was found that the use of double vaccine, though attended with just double the time and trouble in its application, was safer and more permanent and reliable in results; also that for double vaccine shoulder inoculation was permissible, whereas, where single vaccine is used, tail inoculation is by far preferable, being safer and equally expedient.

Probably more than 100,000 cattle have been inoculated with blackleg vaccine manufactured in this department. The detailed results of these inoculations will be published in bulletin form early in 1901.

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Besides experiments with blackleg protective inoculation, the department has done work along the following lines, viz.: Cockle-bur poisoning in young pigs, tuberculin diagnosis, swine-plague protective inoculation, phenol treatment as a preventive for infectious abortion in cattle, etc.

A short bulletin on swine-plague protective inoculation has been issued, and some favorable results have been obtained with phenol treatment for infectious abortion in cattle. A number of press bulletins have been issued by the department, and a correspondence which amounts to over 5000 letters per year has been carried on. These letters are chiefly answers to inquiries concerning diseases of farm animals, and include, of course, all inquiries relating to blackleg in cattle.

The department is now only moderately well equipped to do good and accurate scientific work. The time allotted the veterinarian for actual experimental work is also entirely too short. To do the best work, the Experiment Station veterinarian should be relieved from all college duties.

The present quarters of the Veterinary Department, the second floor of the old armory, are poor, and it is to be hoped that in the very near future better ones will be provided. An appropriation of $100,000 for building and equipment of a pathological laboratory would be one of the most paying investments the legislature of the state of Kansas could possibly make.

GENERAL DEPARTMENT.—During the past year the keeping of the financial records of the Station and the minutes of the meetings of Council has been in the hands of the secretary, Miss Clemons. The care of the mailing list and the general correspondence of the Station, and the oversight of the printing, binding and distribution of its publications, has been in charge of Professor Willard, as chairman of the Council or director. Certification to the correctness of vouchers has been made by President Nichols.

At the beginning of the fiscal year, the mailing list reached nearly 14,000 in numbers, a large proportion having been added within the six months preceding. These additions had been recorded in such a way that, with the older portions, the entire list was in such a form as to make it very expensive to use, and impossible to correct or to consult without an inordinate expenditure of time. A complete revision and the adoption of a permanent and flexible system was determined upon. The names of all who had been heard from within six months, in reference to bulletins, were checked on the list, and to the copy of Bulletin No. 89, sent to all others, a private mailing card was attached, which the recipient was requested to return with his

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name and address, if he wished further bulletins sent to him. The names that had been checked were written on cards of the same size, and, with the private mailing cards returned, constituted the nucleus of the revised list. These cards are arranged alphabetically, as to states, post-offices, and individuals. As new names are added, each is placed upon a card, which is put in its proper alphabetical position.

The list is thus capable of indefinite expansion, ready consultation, and easy correction. The cards, in addition to the name, bear the date and show by what authority the name has been added; that is, whether at the request of the owner or that of some one else, and if the latter, whom. Additions to the list have been made in large numbers, but a special effort has been made to avoid anything like padding. Large lists are frequently sent in for entry, and the usual course has been to send to each one named a package of our bulletins treating on a variety of subjects, and with them a private mailing card, which can be returned with the name of the one who received it properly spelled and with his address. This then goes into the regular card list. Having the names thus sifted with considerable care, so as to insure sending the bulletins only to those who will appreciate them, it is believed that the list will not require frequent revision, but, whenever revision is necessary, it can be done intelligently and with discrimination by the aid of the date and other memoranda on the cards,

The mailing list, for convenience of use in the dispatch of the several classes of publications of the Station, and for certain advantages in referring to it, is divided into a number of distinct sections, and some of these are subdivided. A number of these groups of names have been added to the list by the Station Council with the expectation that, by sending the publications to them, many times as many more throughout the state would become acquainted with the work of the Station. The total number on our mailing list at the close of the fiscal year is over 17,000.

The card list is not used to mail from directly. The whole has been linotyped, and is held in that form, and as mailing sheets are required, proofs are taken off, which are used in addressing the envelopes by means of a mailing machine. As new names are added to the card list they are added to the linotype list also, each being put in its proper alphabetical place with the same facility as the cards are in the other lists. Names are dropped from the linotype list, when occasion requires, with equal ease. By this method we keep our mailing list revised to date. The expense of installing this system of handling the mailing list has not been very great, and it is maintained at a minimum cost.

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It is proper to state in this connection that the actual mailing of publications to those on the printed list has been done in the College printing-office, under the immediate supervision of Supt. J. D. Rickman, to whose executive ability the Station is largely indebted for the promptness and accuracy with which the mailing of the year has been done.

The room formerly used by the College as a bookstore has been assigned to the Station for the storage of publications. We have here ample facilities for their convenient arrangement, and thus effect a considerable saving in the time required to mail bulletins in answer to the requests that are constantly received. After the bulletins have been sent to the regular list, the remainders are stored here, and of these 200 are reserved for future requirements in meeting the requests of libraries and officials for back publications. The others are available for use in answering inquiries, and are also sent to the new names added to the mailing list as long as there is a sufficient supply.

General Statement.

The influence and value of the Station have increased during the past year, as shown by the extent to which its publications have been copied, and the very appreciative letters that are received from the farmers of the state and elsewhere. Applications for our publications come from all parts of the world. Letters of inquiry upon the greatest variety of agricultural topics are received in large numbers, chiefly from our own state, but not infrequently from others, and even from foreign countries. This is doubtless in part due to the increasing knowledge of the experiment-station system of this country, and growing confidence in the value of results obtained through it.

One of the means by which the work of the Station has been brought to the favorable notice of the public has been through the farmers' institutes, which have been held in large numbers in nearly all parts of the state the past year. An appropriation was made by the legislature to cover the expenses of these institutes, but the chief draft for speakers has been upon the Experiment Station force. The Council believes that a limited attendance upon farmers' institutes is not only of benefit to the localities visited, but that the Station force, by coming in contact with the problems of the state by meeting its people, are able to do better work, and that in the future the demands of this important educational field should be met by an appropriation that will provide for an increase in the Station force,

Respectfully submitted.

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