

STILLWATER, OKLAHOMA.

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Oklahoma

Agricultural

Experiment

Station.

BULLETIN NO. 1.

GENERAL INFORMATION, ORGANIZATION AND HISTORY.

# BULLETIN NO. 1

—OF—

## The Oklahoma Agricultural Experiment Station.

### General Information.

J. C. NEAL, DIRECTOR.

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In response to a general desire of the agriculturists of Oklahoma, to understand clearly the objects and aims of the Experiment Station recently established at Stillwater, it has been deemed advisable to devote the first Bulletin to a somewhat extended account and explanation of its organization, and the proposed lines of investigation.

## HISTORY.

The Oklahoma Agricultural Experiment Station was established in conformity to the provisions of an Act of Congress entitled,

An Act to establish agricultural experiment stations in connection with the colleges established in the several States under the provisions of an Act approved July second, eighteen hundred and sixty-two, and of the Acts supplementary thereto.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:*  
That in order to aid in acquiring and diffusing among the people of the

United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science, there shall be established, under the direction of the college or colleges or agricultural department of colleges in each State or Territory established, or which may hereafter be established, in accordance with the provisions of an Act approved July second, eighteen hundred and sixty-two, entitled "An Act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," or any of the supplements to said Act, a department to be known and designated as an "agricultural experiment station:" PROVIDED, That in any State or Territory in which two such colleges have been or may be so established the appropriation hereinafter made to such State or Territory shall be equally divided between such colleges, unless the legislature of such State or Territory shall otherwise direct.

SEC. 2. That it shall be the object and duty of said experiment stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches and experiments bearing directly on the agricultural industries of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

SEC. 3. That in order to secure, as far as practicable, uniformity of methods and results in the work of said stations, it shall be the duty of the United States Commissioner of Agriculture to furnish forms, as far as practicable, for the tabulation of results of investigation or experiments; to indicate, from time to time, such lines of inquiry as to him shall seem most important; and, in general, to furnish such advice and assistance as will best promote the purposes of this Act. 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 said Commissioner of Agriculture, and to the Secretary of the Treasury of the United States.

SEC. 4. That bulletins of reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports and the annual reports of said stations shall be transmitted in the mails of the United States free of charge for postage, under

such regulations as the Postmaster-General may from time to time prescribe.

SEC. 5. That for the purpose of paying the necessary expense of conducting investigations and experiments and printing and distributing the results as hereinbefore prescribed, the sum of fifteen thousand dollars per annum is hereby appropriated to each State, to be specially provided for by Congress in the appropriations from year to year, and to each Territory entitled under the provisions of section eight of this Act, out of any money in the Treasury proceeding from the sales of public lands, to be paid in equal quarterly payments, on the first day of January, April, July and October in each year, to the Treasurer or other officer duly appointed by the governing boards of said colleges to receive the same, the first payment to be made on the first day of October, eighteen hundred and eighty-seven: PROVIDED, HOWEVER, That out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement and repair of a building or buildings necessary for carrying on the work of such station; and thereafter an amount not exceeding five per centum of such annual appropriation may be so expended.

SEC. 6. That whenever it shall appear to the Secretary of the Treasury from the annual statements of receipts and expenditures of any of said stations that a portion of the preceding annual appropriation remains unexpended, such amount shall be deducted from the next succeeding annual appropriation to such station, in order that the amount of money appropriated to any station shall not exceed the amount actually and necessarily required for its maintenance and support.

SEC. 7. That nothing in this Act shall be construed to impair or modify the legal relation existing between any of the said colleges and the government of the States or Territories in which they are respectively located.

SEC. 8. That in States having colleges entitled under this section to the benefits of this Act, and having also agricultural experiment stations established by law separate from said college, such States shall be authorized to apply such benefits to experiments at stations so established by such States; and in case any State shall have established under the provisions of said act of July second aforesaid, an agricultural department or experimental station, in connection with any university, college or institution not distinctively an agricultural college or school, and such State shall have established or shall hereafter establish a separate agricultural college or school, which shall have connected therewith an experimental farm or station, the legislature of such State may apply in whole or in part the appropriation by this Act made, to such separate agricultural college or school, and no legislature shall by contract, express or implied, disable itself from so doing.

SEC. 9. That the grants of moneys authorized by this act are made subject to legislative assent of the several States and Territories to the purposes of said grants: PROVIDED, That payments of such installments of the appropriation herein made as shall become due to any State before the adjournment of the regular session of its legislative meeting next after the

passage of this Act shall be made upon the assent of the Governor thereof duly certified to the Secretary of the Treasury.

SEC. 10. Nothing in this Act shall be held or construed as binding the United States to continue any payments from the Treasury to any or all the States or institutions mentioned in this Act, but Congress may at any time amend, suspend or repeal any or all the provisions of this Act.

Approved March 2, 1887.

Accordingly the first Legislature of the Territory of Oklahoma passed the following resolution of assent, and an Act, the sections relative to the Experiment Station only being quoted :

“ CHAPTER II.—AGRICULTURAL COLLEGE.

Resolution accepting the provisions of an Act of Congress entitled “An Act to establish agricultural experimental stations in connection with the colleges established in the several States under the provisions of an Act approved July second, eighteen hundred and sixty-two,” and of the Acts supplementary thereto.

*Be it resolved by the Legislative Assembly of the Territory of Oklahoma:*

1. That the provisions of an Act of Congress, entitled “An Act to establish agricultural experimental stations in connection with the colleges established in the several States under the provisions of an Act approved July second, eighteen hundred and sixty-two,” and Acts supplementary thereto, approved March second, eighteen hundred and eighty-seven, are hereby accepted by the Territory of Oklahoma, and the Territory hereby agrees and obligates itself to comply with all the provisions of said Act.

2. RESOLVED, That upon the approval of this Act by the Governor, he is hereby instructed to transmit a certified copy of the same to the Secretary of State and the Secretary of the Interior of the United States.

Approved October 27, 1890.

An Act to locate and establish an Agricultural and Mechanical College in Payne County, Oklahoma Territory.

Took effect December 25, 1890.

*Be It enacted by the Legislative Assembly of the Territory of Oklahoma:*

3. An Agricultural and Mechanical College is hereby located in Payne County. It shall be the duty of the Governor to appoint three competent citizens of said Territory as a Board, whose duty it shall be to locate such institution at some point in Payne County, and report their actions and doings to

the Governor relative thereto within ninety days after their appointment.

4. Such institution shall not be located by said commissioners upon less than eighty acres of land, suitable and fit for use as an agricultural and experimental station, which land shall be conveyed to such institution for the use and benefit thereof by good and sufficient title thereto. \* \*

5. \* \* \* \* \*

6. Such institution shall be designated "The Agricultural and Mechanical College of the Territory of Oklahoma," and shall be an institution corporate under the laws of the Territory of Oklahoma, and the government and management thereof is hereby vested in a board of regents to be known as the "Agricultural and Mechanical College Board of Regents."

7. Such college, by its regents, may take title to real estate, enter into contracts for the location of buildings, and do all things necessary to make it effective as an educational institution.

8. Such Board of Regents shall consist of five members and the Governor of the Territory, who shall be ex-officio member of such board. The Governor shall nominate and appoint such regents, who shall hold their offices, two of them for two years and three of them for four years, and until their successors shall be appointed and confirmed biennially by the Legislative Council: PROVIDED, HOWEVER, that if there be organized a Territorial Board of Agriculture, such board may, at its meetings, designate two persons, to be appointed members of the Board of Regents, and when so designated they shall be appointed by the Governor as aforesaid. The Governor shall have power to fill all vacancies in said board which occur when the Legislature is not in session, and they shall hold their offices until their successors are appointed and qualified under this act. The Governor shall cause to be issued to each of said regents a commission under the seal of the Territory.

9. At the first meeting of said board it shall organize by the members thereof taking and subscribing an oath of office as required of all civil officers of the Territory, and shall then proceed to elect a president and treasurer, and the president shall be president of the college and shall be secretary of the board. A majority of the board shall be a quorum for the transaction of business. The board shall require a bond of its treasurer and fix the amount thereof.

10. \* \* \* \* \*

11. The said Board of Regents shall direct the disposition

of all moneys appropriated by the Territorial Legislature or by Congress, or funds arising from the sale of bonds provided for in this Act for the Agricultural College or Experimental Station for Oklahoma Territory, and shall have supervision or charge of the construction of all buildings provided for said college and farm. The Board of Regents shall have power to employ a president and necessary teachers, instructors and assistants to conduct said school and carry on the experimental farm connected therewith, and to appoint one of its members superintendent of construction of all buildings \* \*

12. The said board shall audit all accounts against the funds appropriated for the use of the Agricultural College and Experimental Station, and the Territorial auditor shall issue his warrant upon the Territorial treasurer for the amount of all accounts which shall have been audited and allowed by the Board of Regents and attested by the president and secretary of the same.

13. \* \* \* \* \*

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17. \* \* \* \* \*

18. The president of the college and Board of Regents shall constitute a committee to fix the rate of wages to be allowed to students for labor on the farm or in the shops or kitchens of the Agricultural College.

19. The faculty shall make an annual report to the Board of Regents on or before the first Monday in December of each year, showing the condition of the school and farm and the results of farm experiments, and containing such recommendations as the welfare of the institution, in their opinion demands.

20. The Board of Regents shall make a report to the Governor on or before the last Monday in December next preceding each biennial session of the Territorial Legislature, containing a financial statement, showing the conditions of all funds appropriated for the use of the Agricultural College and Experimental Station, also the moneys expended and the purposes for which the same were expended in detail, also the condition of the institution and the results of all experiments carried on there.

21. \* \* \* \* \*

22. There is hereby established an Agricultural Experimental Station in connection with the Agricultural College, by

this act established, and under the direction of the Board of Regents, for the purpose of conducting experiments in agriculture according to the terms of the Acts of Congress establishing Agricultural Colleges and Experimental Stations.

28. The assent of the Legislature of the Territory of Oklahoma is hereby given in pursuance of the requirements of section nine of said Act of Congress, approved March 3, 1887, to the grant of money therein made, and to the establishing of an Experimental Station in accordance with section one of said last mentioned act, and assent is hereby given to carry out all and singular the provisions of all the Acts of Congress.

25. The Board of Regents hereby established in connection with the Governor and Secretary of the Territory, shall be fully authorized to receive from the United States any and all appropriations made for the support or maintenance of Agricultural Colleges within the Territory, and shall be authorized to receipt for the same and shall be chargeable therewith when received from the United States.

25. Males and females shall be admitted to all the privileges of the institution hereby established, and all citizens of the Territory of Oklahoma between the ages of twelve and thirty years shall be admitted to instruction therein, if they apply as students therefor.

This act shall be in force and effect after its passage and approval."

His Excellency, Governor George W. Steele, thereupon appointed the Honorables R. J. Barker, A. A. Ewing, J. A. Wimberly and J. P. Lane as regents, and the Honorables W. H. Merten, W. H. Campbell and J. M. Stovall as commissioners to locate the site for the Agricultural College and Experiment Station. The commissioners, after duly examining various lands offered as sites, on the 11th day of July, 1891, made their report to the Governor, the concluding portion of which is given.

\* \* \* \* \*

"We were of the opinion, that the tract for the site should embrace upland and bottom land, and selected a body of land containing two hundred acres, that contained the various qualities of soil as we thought would be most suitable for the purposes for which the college is to be established, and asked the citizens of the town of Stillwater and vicinity to make a formal tender of deeds conveying the same to the Territory.

The land so selected by us is located northwest of the town of Stillwater, and is described as follows :



The northwest quarter of the southwest quarter of section 14.

The southwest quarter of the northwest quarter of section 14.

The northeast quarter of the southeast quarter of section 14.

The south half of the northeast quarter of section 15.

All in township 19, range 2 east, in Payne county, Territory of Oklahoma.

Deeds for the last above described tracts have been executed, covering the same to the Territory, and are herewith transmitted to your Honor for filing, and we hereby select and designate the said tracts as the site for said Agricultural and Mechanical College.”

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On the 25th of June, 1891, the Board of Regents met, and organized by electing Hon. R. J. Barker as president and Hon. A. A. Ewing as treasurer.

August 14, 1891, Dr. James C. Neal, of the Florida Experiment Station, was elected director, and November 25, 1891, A. C. Magruder, B. S., formerly of the West Virginia Experiment Station, was elected agriculturist and horticulturist, Regent J. A. Wimberly was elected superintendent of buildings, and the work on the station ordered to begin forthwith.

December 2, 1891, plowing the land for the experiment orchard began.

## Outline of Work.

The object of the Station is well stated in the second section of the Act of Congress, and as soon as possible and compatible with thorough work, all these investigations will be undertaken, with reference to the particular needs of the agriculturists of Oklahoma.

At the same time, it is well to know the difficulties before the Station. The records of temperature, rainfall and sunshine for the Territory are too meager to be of much value; the soils have not been analyzed, and very few experiments made heretofore with fruits, crops or vegetables, hence it will not be practicable to follow a rigid program in a new and untried soil and climate.

The growth during one year, of a few fruit trees, indicates a possible special adaptation of the Territory to orchards, and certainly this point deserves the prominence I shall give it, in

planting, as soon as possible, three trees of every variety known to do well in similar latitudes, or supposedly like climates. These trees will be labelled and arranged so that in the future, fruit growers may avail themselves of this test orchard in selecting trees, and thus avoid worthless varieties, old varieties sold under new names, or new and untried varieties usually sold at the highest rates, and often of little value to this peculiar climate and soil.

Really, the station should be used to prevent the waste of thousands of dollars, annually spent by innocent purchasers of trees grown in other soils, entirely different climates, and utterly unsuited to the conditions present in Oklahoma, and it would be a great aid to the fruit industry if no new fruit tree were purchased except it had a guarantee from the Experiment Station.

To make this test properly will take a series of years—probably ten—but the gain to the public would justify the delay.

New varieties of fruits, vegetables, fiber plants and forage plants will be put on trial, and their merits or demerits made known after careful experiments in sufficient time to be certain of results.

Thus the Station hopes to aid the agriculturists of Oklahoma, and save time, labor and money of individual experimenters, expenditures either wasted or benefitting but the few. The same outlay at the Station may be utilized by the whole Territory, yet the cost be practically nothing to each citizen.

To ascertain the varieties of forest trees most available for the purposes of windbreaks, shade and fuel, is another line of investigation that will receive an amount of attention in proportion to its importance. It is generally conceded that creating large areas of shaded land in forests will check evaporation, retard the force of the wind, equalize somewhat the temperature, and possibly solve the question of insufficient rainfall. The vast treeless plains of this Territory in time may be reforested to benefit the water supply, both of rainfall and soil moisture.

The soils of Oklahoma being so unlike those of adjoining States, the prairie grasses form a sod that is said to act peculiarly during the first years of cultivation, and it is a commonly received saying that no crop will ever do well on winter broken sod—or as it is usually expressed, “winter breaking ruins the land.”

I propose to thoroughly investigate the truth or falsity of this idea, by plowing in different seasons, examining the chem-

ical changes that occur at varying periods, and testing by planting various crops in this new land, to be compared with the same crops in older plats of land broken one year, and two years ago.

New methods of speedily reducing sod to tillable land will be studied, and crops best adapted to new land be given an extended trial.

Plant diseases and insect ravages will in time have especial attention, and descriptive Bulletins, illustrated if necessary, issued as the occasion demands.

While the Station cannot lend its resources to advance any private ends, it will gladly undertake any line of investigation that promises to be of public utility and solicits correspondence, suggestions and friendly criticism from all interested in the advancement of the agricultural interests of Oklahoma.

One word of restraint may well be added:

There are so many uncertain factors in these Agricultural Experiments, that exact conclusions ought not to be expected in any brief period. One drouth, an insect raid, an unexpected frost or rainfall may vitiate the results of an experiment—so that, in many cases, it may take some years to make any deductions of value. The work for several years in Oklahoma will be preliminary, and in this, as other enterprises we must labor and wait.

As it is not the purpose of the station to grow crops on an extensive scale—merely small plats averaging each the 1-10 of an acre for tests of vegetables, and field crops, 3 trees of each kind of fruit, nut-trees and vines, and 2 dozen of each variety of small fruits, and as nothing is to be sold from the station, except by the express order of the regents, it is hardly necessary to state that the station will not in any way antagonize the farming interests of any section, by becoming a rival producer—on the contrary it is hoped that every farmer will consider himself invited to visit the station, see its workings, ask questions, investigate its methods, criticise and suggest. A hint, an observation, may lead to very important discoveries, and it is the aim of the Director and his Staff to make this Station a recognized factor in the rapid advancement of the agricultural resources of Oklahoma.

To extend the usefulness of these bulletins, it is very much desired that the mailing list, as soon as possible, will embrace every actual farmer in the territory. Send names, plainly written, with the address, on a postal card to the director, and as issued, the Bulletins will be sent, free. Questions relative to

Insects, Plant diseases and Station matters should be addressed to the Director; those relating to Dairying, Horticulture and Agriculture to the Agriculturist.

Send insects, small plants, seeds and specimens of soils in small TIN boxes prepaid by mail—never in letters, wood or paper boxes.

## Department of Agriculture.

A. C. MAGRUDER, B. S.

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In assuming charge of the Agricultural department of the Oklahoma Experiment Station (horticultural work being included), I find 160 acres of land at the command of the department to be used for agricultural experiments. Fully 120 acres of the land had never been broken prior to this fall when, under the supervision and by order of the Director, the work of turning under the sod of 50.3 acres, to be used for orchards and gardens, was begun. About 40 acres of the Station farm is "one and one-half years from the sod."

Fully realizing the importance of fruit-growing in any section and firmly believing that the soil and climate of the Territory is most admirably adapted to the growing of fruits of all kinds, exclusive of those requiring some special climate or soil, experiments with two hundred and sixty (260) varieties of apples, one hundred and seventy-one (171) varieties of peaches, seventy-two (72) varieties of pears, one hundred and five (105) varieties of plums, sixteen (16) varieties of apricots, and forty-two (42) varieties of cherries, besides a complete assortment of forest and nut trees, including pecans, walnuts, chestnuts, etc., to be cultivated for wind-breaks, nuts, timber, and other products, have been instituted to go into effect this coming spring. Much time is now being given to the careful selection of the fruit stock and forest trees.

In addition to the above the small fruits, viz: Strawberries, blackberries, raspberries and grapes will receive proper

attention with a view to testing their adaptability to the soils of the Territory.

At present there is not a building on the farm, but offices, workrooms, stables and barns will be in course of construction within the next month, when the work of the department can be carried on in a much more satisfactory manner.

The attention necessary to devote to the orchards and garden in getting them under headway will prevent our entering now into extensive lines of other work; but if time is found a complete series of experiments with corn, wheat and oats will be carried out.

As soon as practicable the farm department will go into experiments with the different breeds of our domestic animals hogs, sheep, horses and cattle, designed to test the cost of keeping and the value of their products. The principal dairy and beef breeds of cattle will receive special attention, and a dairy house for experiments in the manufacture of butter and cheese will be erected.

A complete line of grass experiments will be carried on.

The important subject of silos and silage will receive due attention as soon as the work, now in progress at the Station, is sufficiently developed to allow the attention of the department in other directions.

The extraordinary yield of last year's sorghum crop, and the fair yield of the different root crops all over the Territory point out the necessity of thorough investigations with these crops, especially regarding their economic value as feedstuffs. If we may take last year's cane crop as a fair estimate of the capacity of our soil to produce this crop we have every reason to believe that Oklahoma will, in the near future, be ranked as one of the principal sugar producing states. This department, fully realizing this, will at the earliest possible date begin experiments with different varieties of sorghum with a view to finding out those kinds yielding here the largest per cent. of saccharine matter, and such other observations will be given to the public through the bulletins of the Station, as will be of value in growing the crop to best advantage.

To aid us in these and other lines of work the farmers of the Territory are earnestly requested to confer with us upon all matters pertaining to Agriculture, and assistance will be rendered by the department when possible.

It may be well to impress upon the public in the beginning that the Experiment Station farm should not be looked upon as a "model farm," for in nearly all instances in testing

any farm or garden crop, courses other than the usual manner of preparing the soil, planting, cultivating and harvesting, where a farm is run for a monetary profit, will be pursued with a view to finding out, if possible, more economical methods of producing the same or better ends.

STILLWATER, Oklahoma, December 21, 1891.

