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THESE FIFTY YEARS

by

ROBERT P. CRAWFORD

THESE FIFTY YEARS

CIRCULAR 26 OF THE AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEBRASKA

LOOKING DOWN THE CAMPUS

THESE FIFTY YEARS

A HISTORY OF THE COLLEGE OF AGRICULTURE OF THE UNIVERSITY OF NEBRASKA

BY

ROBERT PLATT CRAWFORD

ASSOCIATE PROFESSOR OF JOURNALISM AND AGRICULTURAL EDITOR

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PREFACE

IT seems especially appropriate at this time to publish a history of the College of Agriculture of the University of Nebraska. The year 1922 marked the fiftieth anniversary of the formal establishment of the college by the Board of Regents, while the year 1924 marked the fiftieth anniversary of the enrollment of the first students in agricultural subjects. It is hoped and intended that this little volume shall preserve for the future much valuable material that would otherwise soon be forgotten.

To study back over fifty years of Nebraska education and agriculture and to choose the facts that should make up a history of this kind has been no easy task. In fact, in the later years the writer has been confronted with such a mass of material as to threaten seriously the balance and scope of the work. Occasionally there have been temptations to deviate from the straight and narrow path and to write a history of the University of Nebraska or of Nebraska agriculture. But it has always seemed wise to stick to the matter in hand, with only such references to the outside as are necessary to make our history a readable and interesting affair.

The history of each department or division of work within the college has been concluded at some convenient point within the last three or four years. The passing of judgment and review on matters of the immediate present has been left for some future writer. In correcting the final proofs, however, it has happily been found possible to include some last minute facts of interest.

To have written this history without the whole-hearted interest and co-operation of a great many different people would have been quite impossible. The officers and faculty of the college have given a great measure of assistance in furnishing and in checking up on source material. There

are many who have taken more than ordinary interest in the supplying of data, or in the critical reading of the manuscript, or in its preparation for the press. Accordingly, due acknowledgment should be made to Dean E. A. Burnett, of the college; Dean James Stuart Dales, the veteran secretary of the Board of Regents; Dr. A. E. Sheldon of the Nebraska State Historical Society; Dr. E. S. Evenden of Columbia University; Dr. Guernsey Jones of the department of history of the University of Nebraska; Prof. M. H. Swenk, Mr. S. W. Perin, and Mr. W. W. Marshall of the College of Agriculture; Mr. S. C. Bassett of Gibbon; Mr. Ralph B. Scott of the University Press, and Mr. Gayle C. Walker of the School of Journalism.

ROBERT P. CRAWFORD

Lincoln, Neb.,
May, 1925.

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These Fifty Years

I

THE FEDERAL LAND GRANT

THE modern-day agricultural college with its four-year collegiate course, its high schools and short courses, its well-developed scientific research, and its extension activities, has been a development of hardly more than the last quarter century. Certainly fifty years will cover the outstanding accomplishments. After the passage of the Morrill Land-Grant Act of 1862 it was many years before the agricultural or industrial colleges (as they were often called) began to lay the foundations of agricultural education and research as they are known today.

Because the prosperity of the New World hinged to a large extent on the development of its agricultural resources, well-intentioned but often feeble attempts at agricultural instruction were frequently made. Perhaps the first record of any agricultural instruction in America is that of the Franciscan monks who in 1629 endeavored to supplement "primitive practices with the more scientific and fruitful methods of agriculture brought from the Old World" among the Pueblo Indians of the Southwest.

In 1751 William Smith issued a prospectus designed as a model for colleges in which he provided for a course to be known as the chemistry of agriculture. His plan was carried out in the Philadelphia Academy, now the University of Pennsylvania. Animal husbandry was mentioned in the original prospectus of King's College (Columbia University) in 1754, and a professorship of botany and agriculture was established there in 1792. "An attempt is made by the professor, who is a practical farmer,

to elucidate and explain the economy of plants, and affinity to animals, and the organization, stimuli, life diseases and death of both classes of beings," reads a report of this course.

President Washington was a member of the first society for promoting agriculture, which was organized at Philadelphia, March 1, 1785. In 1801 the Massachusetts Agricultural Society started a subscription which resulted in the establishment of a professorship of natural history at Harvard University in 1804. The will of Benjamin Bussey of Roxbury, Mass., proved in 1842, bequeathed half of the income of about $300,000 and 200 acres of land in Roxbury to the president and fellows of Harvard University on condition that they establish on the farm "a course of instruction in practical agriculture, in useful and ornamental gardening, in botany, and in such other branches of natural science as may tend to promote a knowledge of practical agriculture and the various arts subservient thereto." But, due to other provisions in the will, nothing was done until 1870.

In 1839 the distribution of seeds and plants thru a Congressional appropriation began, which was to result, later on in 1862, in the establishment of the United States Department of Agriculture. In 1849 the New York Agricultural Society established at Albany a chemical laboratory for the analysis of soils, manures, etc. Michigan in 1857 and Pennsylvania and Maryland in 1859 established agricultural colleges which grew to be permanent institutions. The Michigan school was the first exclusively agricultural college in the United States.

These were for the most part rather modest attempts, but they were indications that people were beginning to appreciate the necessity for more information about agriculture. On the other hand, there had been a rather insistent demand for education coming from the great mass of people. Education for the masses as well as the classes was echoed by many state legislatures and individuals.

While educational institutions had drawn on the farms and industries for students, they had passed their graduates on to other fields of activity.

The answer to the cry for higher education of a popular nature was found in the Land-Grant College idea. Probably no single idea has ever so moulded the history of higher education in the United States.

PROFESSOR TURNER AND THE ILLINOIS PLAN

The question of money constantly stood in the way of those who would provide agricultural and industrial education for the great mass of the people, and consequently the state legislatures were not at all backward about asking the Federal Government to help out by means of grants of land. The Legislature of Michigan petitioned Congress in 1850 for a donation of 350,000 acres of public lands for the establishment of an agricultural college. The Senate of New York in 1852 asked Congress "to make grants of land to all the states for the purpose of education and for other useful purposes." Other states asked for the establishment of a national institution which would do for agriculture what West Point was doing for the Army.

In Illinois Prof. J. B. Turner was promoting the idea of an institution which would do for the farmer and the mechanic what private colleges were doing for the lawyer, doctor, and clergyman. His plan called for the establishment of a university in each state in the Union, and was widely discussed. The Legislature of Illinois in 1853 was the first legislature to petition Congress to make a grant of federal lands to each state in the Union for the purpose of developing in each state one institution "for the more liberal and practical education of our industrial classes and their teachers." The Illinois plan was the one which was finally embodied in the Land Grant of 1862 and its auxiliary acts.

The agitation for popular colleges was bearing fruit and was reflected in an editorial, appearing in the *New York Tribune* February 26, 1853:

"It may now be ten years since a few poor and inconsiderate persons began to agitate in favor of a more practical system of thorough education, whereby youth without distinction of sex should be trained for eminent usefulness in all the departments of industry. They demanded seminaries in which agriculture, the mechanic arts, the management of machinery, etc., should be thoroughly taught, based on a knowledge of chemistry, geology, botany, hydraulics, etc., with a corresponding proficiency in all that pertains to housewifery, and household manufactures for female pupils." [1]

In speaking of the Illinois plan, the editorial went on:

"Here is the principle contended for by the friends of practical education abundantly affirmed, with a plan for its immediate realization. And it is worthy of note that one of the most extensive of the public land (or new) states proposes a magnificent donation of public land to each of the states, old as well as new, in furtherance of this idea. Whether that precise form of aid to the project is most judicious and likely to be effective, we will not here consider. Suffice it that the Legislature of Illinois has taken a noble step forward, in a most liberal and patriotic spirit, for which its members will be heartily thanked by thousands throughout the Union. We feel that this step has materially hastened the coming of Scientific and Practical Education for all who desire and are willing to work for it. It cannot come too soon."

PASSAGE OF THE LAND-GRANT ACT

Justin S. Morrill, representative and later senator from Vermont, was active in Congress in promoting the matter. On December 14, 1857 he introduced into the lower house of Congress the first bill for a federal grant of land to each state. Congress passed the bill in 1859, but it was vetoed by President Buchanan. Senator Wade of Ohio again introduced a bill. The legislation was finally passed and signed by President Lincoln July 2, 1862, four and a half years after Mr. Morrill had introduced his original bill.

[1] In quotations the original spelling, punctuation, and capitalization have been generally followed.

Each state had now received a grant of 30,000 acres of public land for each senator and representative in Congress. The money derived from the sale of these lands was to be invested in securities bearing not less than 5 per cent interest and the income was to be used for the support of at least one college where the leading object should be to teach agriculture and mechanic arts.

This legislation is known as the Morrill Act, because of the activity of Senator Morrill in promoting it. In commenting upon his desire for such legislation Mr. Morrill stated that such institutions had already been established in other countries and were supported by their governments, but they were confined to agriculture, a curriculum which Mr. Morrill considered too limited. "This for our people with all their industrial aptitudes and ingenious inventions appeared to me unnecessarily limited," Mr. Morrill stated. His further reasons are given below:

"First, that the public lands of most value were being rapidly dissipated by donations to merely local and private objects, where one state alone might be benefited at the expense of the property of the Union.

"Second, that the very cheapness of our public lands, and the facility of purchase and transfer, tended to a system of bad farming, strip and waste of soil, by encouraging short occupancy and speedy search for new homes, entailing upon the first and older settlements a rapid deterioration of the soil, which would not be likely to be arrested, except by a more thorough and scientific knowledge of agriculture, and by a higher education of those who were devoted to its pursuit.

"Third, being myself the son of a hard-handed blacksmith, the most truly honest man I ever knew, who felt his own deprivation of schools, I could not overlook mechanics in any measure intended to aid the industrial classes in the procurement of an education that might exalt their usefulness.

"Fourth, that most of the existing collegiate institutions and their feeders were based upon the classic plan of teaching those only destined to pursue the so-called learned professions, leaving farmers and mechanics and all those who must win their bread by labor to the haphazard of being self-taught or not scientifically taught at

all, and restricting the number of those who might be supposed to be qualified to fill places of high consideration in private or public employments to the limited number of the graduates of literary institutions. The thoroughly educated, being most sure to educate their sons, appeared to be perpetuating a monopoly of education inconsistent with the welfare and complete prosperity of American institutions.

"Fifth, that it was apparent, while some localities were possessed of abundant instrumentalities for education, both common and higher, many of the states were deficient and likely so to remain unless aided by the common fund of the proceeds of the public lands, which were held for this purpose more than any other."

GRANTS IN THE SEVERAL STATES

At last each state had received a perpetual endowment for at least one college, which was to offer courses of a practical character. With the exception of 10 per cent which might be expended for the site of a college, all the money derived from the sale of the lands or land scrip granted to the various states was to be invested as a permanent endowment fund. In some cases entirely new colleges were established. In other states there was a wild scramble among the existing colleges for the land grant money.

In Michigan the land grant went to the Michigan Agricultural College, which had been established a few years before. In Massachusetts the money was given partly to the Massachusetts Institute of Technology and partly to an institution created for the purpose of affording agricultural instruction, at Amherst. In some states the money was given to state universities already established, as in Wisconsin and Minnesota, while in other states institutions which were to become great state universities were established thru the act. The latter was the case in Nebraska.

In most of the eastern states there was not, of course, sufficient public domain available for entry to provide 30,000 acres of land for each senator and representative in Congress. The states that had public lands within their

borders could take up and locate the land. The states that did not have this public land were issued scrip, representing land acreage. The state receiving this scrip could not locate land in another state, but it could sell this scrip to individuals, and the purchaser might take up government lands in any state.

Had every state handled this matter as well as it might, the foundation for almost self-sustaining educational institutions might have been laid everywhere. In many cases land and scrip were bartered away for next to nothing. Within fifty years these lands were selling at from $50 to $100 an acre. In fact, the apparent lack of foresight with which the matter was handled was responsible for the demand for more federal money, which led to the Second Morrill Act of 1890.

The market was flooded with this land scrip. Many of the states disposed of their scrip at less than $1 an acre. Indiana received $212,238.50 for its 390,000 acres. Louisiana sold its 209,920 acres at 87 cents an acre. Maine sold its scrip, representing 210,000 acres, for $116,359.20. Tennessee sold its scrip for a little more than 90 cents an acre. So it went, almost without exception, throughout the entire list of states receiving scrip.

But there was one big exception and that exception was Cornell University. Ezra Cornell, a benefactor of Cornell College for whom Cornell University was later named, saw New York's land scrip, representing 989,920 acres, being sold out at a little more than 50 cents an acre. Of course no state could of itself locate lands in another state, but there was nothing to prevent an individual from doing so. Mr. Cornell made a contract with the state to buy this scrip and locate the land. He located 500,000 acres of the finest timberlands in Wisconsin. Up to July 1, 1921, the total endowment from the sale of lands amounted to $5,737,698.04, with 280 acres of land still remaining unsold.

The states that were able to locate the lands within their own domain did much better as a rule than the states

receiving the scrip. That was because they could hold the lands until they would bring a better price. Those that held their land the longest naturally were able to secure the largest endowment. The states entering the Union later, and for which provision for similar grants of land was made, tended to keep their lands, rather than the money derived from them, as in the cases of Idaho and Arizona.

Kansas derived $491,746 from the sale of 82,315 acres of land. A deficit of 7,686 acres was made up by Congress in 1907 and this remains unsold. Iowa received $592,463.46 and none of its land remains unsold. It must be remembered that the representation of the western states in Congress was by no means equal to that of the eastern states, and consequently their respective land grants were smaller. But so much better did they handle things that the total amount of endowment received by many western states exceeded that of apparently more fortunate eastern states. The consideration of Nebraska's record in handling its educational land grant will be left until later.

REFERENCES

Agricultural Education. International Encyclopedia, 1918.

Agricultural Education. Monroe's Cyclopedia of Education, 1911.

ANDREWS, BENJAMIN F. *The Land Grant of 1862 and the Land-Grant Colleges.* Bulletin No. 13, 1918, of the United States Bureau of Education.

JAMES, EDMUND J. *The Origin of the Land-Grant Act of 1862.* University Studies, Vol. IV, No. 1, University of Illinois, Urbana, Ill. 1910.

TRUE, A. C. and CLARK, V. A. *Agricultural Experiment Stations in the United States.* United States Department of Agriculture, 1900.

II

THE FOUNDING OF THE UNIVERSITY

A HISTORY of the Agricultural College of Nebraska is also a history of the University of Nebraska. From the earliest years to the present day the two have been inseparably connected. The Agricultural College was established as one of the colleges of the University, later, in 1877, being incorporated in the Industrial College, and still later, in 1909, again becoming a separate college of the University, the College of Agriculture.

The University and Agricultural College received their endowment from two sources. The Enabling Act of 1864, providing for the state's admission into the Union, declared that seventy-two sections (46,080 acres) should be "set apart and reserved for the use and support of a state university, and to be appropriated and applied as the Legislature may prescribe." The Land Grant Act of 1862, referred to in our preceding chapter, allotted 30,000 acres of land to each state for each representative and senator in Congress, for the purpose of "endowment, support, and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts."

An act of 1866 provided "that when any Territory shall become a State and be admitted into the Union such new State shall be entitled to the benefits of the said act of July 2, 1862, by expressing the acceptance therein required within three years from the date of its admission into the Union, and providing the college or colleges within five years after such acceptance." Under the Land Grant Act of 1862 Nebraska was entitled to 90,000 acres, making a

total of 136,080 acres available for the support of a university and agricultural college. Nebraska was admitted as a state on March 1, 1867.

THE LEGISLATURE PROVIDES FOR THE UNIVERSITY

February 15, 1869 marks the establishment of the University. It was on this day, now known as Charter Day in the history of the University, that the Nebraska Legislature passed definite legislation for its establishment. Before this time, however, the Legislature had had in mind the establishment of a University. In an act of the Legislature, approved June 14, 1867, authorizing the selection of 640 acres for the site of the capital city, there was this provision:

"The State University and State Agricultural College shall be united as one educational institution, and shall be located upon a reservation selected by said Commissioners, in said 'Lincoln,' and the necessary buildings shall be erected thereon as soon as funds can be secured by the sale of lands donated to the State for the purposes or from other sources."

In the summer of 1867 the site for the city of Lincoln was selected and four blocks in the north part of the town were set aside for the University. Under the United States law the land grant of the Government had to be accepted within three years after the admission of the state. So Governor Butler in his message of January 9, 1869 had called attention to the necessity of taking immediate action for the organization of the University and Agricultural College.

The Act of February 15, 1869 provided "that there shall be established in this state an institution under the name and style of 'The University of Nebraska.' The object of such institution shall be to afford to the inhabitants of this State, the means of acquiring a thorough knowledge of the various branches of literature, science and the arts."

The Legislature was certainly ambitious enough for the

University, for no less than six colleges and some fifty "chairs" or professorships were established. There was to be a College of Ancient and Modern Literature, Mathematics and the Natural Sciences; a College of Agriculture; a College of Law; a College of Medicine; a College of Practical Science, Civil Engineering and Mechanics; and a College of Fine Arts. In the College of Ancient and Modern Literature, Mathematics and the Natural Sciences there were to be two chairs of ancient languages, two chairs of modern languages, a chair of rhetoric, oratory and logic, a chair of history and geography, a chair of philosophy of the human mind, a chair of moral philosophy, a chair of natural theology and the history of all religions, a chair of the mathematics, a chair of natural philosophy, a chair of chemistry, and a chair of political economy.

In the College of Agriculture there were to be a chair of applied chemistry, a chair of botany, a chair of agriculture, a chair of horticulture, a chair of meteorology and climatology, a chair of veterinary surgery, and a superintendent of the model farm.

The ambitious nature of this program was somewhat tempered by the provision that the regents should fill only such chairs in the College of Ancient and Modern Literature, Mathematics and the Natural Sciences, the College of Agriculture, and the College of Practical Science, Civil Engineering and Mechanics as the wants of the institution should demand. They might require the professors to serve in more than one department or college, until the students increased to sufficient numbers. This law also provided that "no new professorship shall be established without the authority of the Legislature." The College of Fine Arts was not to be established until the annual income of the University Fund reached $100,000.

For the College of Agriculture, there was this additional provision:

"The Governor shall set apart two sections of any Agricultural College land, or Saline land [the salt lands in the early days were

considered of value], belonging to the State, and shall notify the State Land Commissioner of such reservation, for the purpose of a Model Farm, as a part of the College of Agriculture, and such land, so set apart, shall not be disposed of for any other purpose."

The Legislature also provided "for the sale of the unsold lots and blocks on the town site of Lincoln, and for the location and erection of a state university and agricultural college and state lunatic asylum." Sixteen thousand dollars from the proceeds of the lot sale was to be devoted to constructing the capitol dome, and some finishing touches on the capitol, $50,000 was to be devoted to the "state lunatic" asylum, and $100,000 to the erection of a suitable building for the state university and agricultural college. Forty sections of saline lands might also be sold in case the lots did not yield sufficient revenue.

The dream of a great university was now to be realized. Its endowment was to be provided thru the land grants, the actual construction of its first building thru the sale of town lots, and the legislature in 1869 had also provided a one mill tax levy for the support of the institution.

THE UNIVERSITY BUILDING

The sale of lots began on June 5, 1869. The first day $30,000 worth of lots were sold and it seemed evident that the future of the institution would be assured. The plans of the building were drawn by J. M. McBird of Logansport, Ind. The structure was to follow the "Franco-Italian" style of architecture. The contract was let to Silver & Son, August 18, 1869, for $128,480; $28,480 more than the legislative appropriation called for. This brought considerable criticism, which was to increase year by year as the construction of the building became more and more apparent. The cornerstone was laid September 23, 1869. The Masons were in charge of the exercises, Professor Caldwell tells us in his history, and a brass band was

imported from Omaha for the occasion. A banquet, and a dance that lasted from 10 p. m. to 4 a. m., concluded the day's festivities.

It was not an easy task to erect the building, since with Nebraska's meager railroad facilities, the lumber had to be hauled overland. "The contractors for the University pushed the work with remarkable energy," Samuel Aughey tells us in an address which was delivered on Charter Day, February 15, 1881.

> "At this day it is hard to realize the disadvantages under which they labored. The lumber was shipped from Chicago to East Nebraska City, four miles east of the Missouri in Iowa, opposite to the present Nebraska City. It was hauled to Lincoln in wagons, over wretched roads, a distance of sixty-five miles. The contractors paid $10 a cord for wood with which to burn brick, and which was hauled from twenty to thirty-five miles. On April 7, 1870, the brick work was commenced and though there was an interruption of three weeks for want of brick, the walls were completed and the roof on by the middle of the following August. In eighty-two days 1,500,000 brick were made and put in these University walls."

The building had been completed by January 6, 1871, for there is this notation in the report of the Board of Regents for that day:

> "The Board accepted the invitation of D. J. Silver & Son, to visit and examine the University building. On returning to their room, they passed the following resolution:
>
> " 'Resolved, That the visit of this Board to the University building has been made today with great satisfaction; that to us the building appears to be well constructed and substantial, and that its general plan, as well as the details, are eminently well fitted to answer the purpose for which the same was erected.' "

There was considerable question as to the safety of the new building and on June 13, 1871, three professional architects were employed to examine the building. They pronounced the building safe for years to come, but recommended some minor changes, which were made.

EARLY STUDENT DAYS

The University was now ready to receive students and this significant statement appears in the announcement of the University for 1871-72:

> " . . . the Regents, February 7, 1871 resolved to open the first department of the University in the Fall, and on the 4th of April they selected a corps of competent and experienced professors, and fixed the time of opening September 7, 1871."

Only one college of the six came into being at this time, that of Ancient and Modern Languages, Mathematics, and Natural Science. The announcement stated that "the Agricultural College will be organized at the earliest practicable time, to meet the requirements of the law, and the needs of the University. The model farm will soon be located." A Latin school was established, which aimed to take care of those students who did not have sufficient preparation to enter the regular University course.

The members of the faculty were Allen R. Benton, chancellor and professor of intellectual and moral science; S. H. Manley, professor of ancient languages and literature; O. C. Dake, professor of rhetoric and English literature; Samuel Aughey, professor of chemistry and natural sciences; and George E. Church, principal of the Latin school. Mr. Church is said to have taught whatever mathematics and modern languages were given that year.

There were twenty college students in attendance the first year, one junior, two sophomores, five freshmen and twelve who were students in the University classes, but "not entirely regular in the course." The "junior" in the University was J. Stuart Dales, who for fifty years has been a prominent figure in the official life of the University and who is now corporation secretary of the Board of Regents. Mr. Dales and W. H. Snell were the first graduates of the University, receiving their degrees in 1873. The Latin school was the largest division of the University, with 110 students. That was doubtless due to the fact that

there were as yet comparatively few secondary schools in Nebraska which could prepare their students for entrance to the University. The University attendance remained rather small for several years, the number of students enrolled from 1871 to 1877 being 20, 46, 43, 48, 66, and 67. The enrollment in the Latin school for those years was 110, 77, 57, 69, 198, 161.

For the first year three courses were advertised, the classical, the scientific, and the selected. In the last course the students chose such subjects as they preferred, "with the advice and under the direction of the faculty." As might be expected, Latin and Greek were by no means neglected in the University. "The classical course," read the announcement, "is earnestly recommended by the faculty, as that which experience and the practice of the best institutions have shown to be best suited to secure a sound and systematic education." Military drill provided for in the Land Grant Act was to be added later.

TROUBLE WITH THE BUILDING

There was considerable difficulty with the University building beginning the first year. In his first report Chancellor Benton was obliged to report that "some difficulty has been experienced in making the roof impervious to rain. A violent hail storm broke more than twenty panes of glass, and injured the tin roof so that it has been quite difficult to repair the damage." There was also trouble with the furnaces used to heat the building.

The impression seemed to grow that the building was insecure. On July 6, 1877, the Board of Regents resolved to tear down the building and erect a new one, but their action was stayed by the arrival of an architect from Chicago and another from Dubuque, Iowa, who declared that the structure could be readily repaired. New foundation walls were put in and with other improvements which have been made from time to time, the building still stands to-

day. For years it was the headquarters of everything connected with the University—Agricultural College as well as classical course.

CONTROL OF THE UNIVERSITY

In the beginning the general supervision of the University was vested in a board of twelve regents. Nine of them under the law were to be chosen by the Legislature in joint session, three from each judicial district. The chancellor of the University, the governor, and the superintendent of public instruction were the other three members, who served *ex officio*. The new State Constitution of 1875 changed the manner of choosing regents, arranging for six to be chosen by vote of the people, two of them retiring every two years. The first Board of Regents was, however, appointed by the Governor. The name of R. W. Furnas is probably the most conspicuous among those of the first regents, because for years he was to wield important influence in the agricultural affairs of the state.

EARLY FINANCES

The Legislature in 1869 had provided a one-mill tax for the support of the institution. There was evidently some feeling that this tax was too high, especially since the institution had not yet opened for students, and we find the Regents themselves agreeing to a reduction. This notation is found in the report of their meeting February 7, 1871:

> "On motion of Regent Fuller, a bill was ordered to be drafted and presented to the Legislature for adoption reducing the one mill tax for the benefit of the University to one-half a mill. The bill was prepared and intrusted to Senator Thomas."

But the Legislature went one better and reduced the levy to one-fourth of a mill. There it remained until 1877, when the Legislature increased it to three-eighths of a mill, at the pressing request of the Board of Regents. It was not

until 1899 that the tax was restored to the one-mill levy on the dollar of valuation.

From the beginning the University derived practically no money from tuition fees. "To all residents of the State the tuition will be free," read the University's first announcement. "An entrance fee of $5 is paid by every student at the time of his matriculation. Non-residents of the State are charged $8 per term." At that time there were three terms of school, a fall, winter, and spring term. A few years later this fee charged outsiders was abolished, it being felt that most of those coming from other states were prospective residents for Nebraska. From 1876 to 1879 an incidental fee of $2 was charged students.

The salaries of the faculty were comparatively liberal for that day. In fact, it was a long period of years before there was much of an increase over those salaries paid the first few years. At a meeting of the Board of Regents held in December, 1870, the salary of the chancellor was fixed at $5,000. But at a meeting April 4, 1871, the salary of the chancellor was fixed at $4,000, and that of the professors at $2,000. At a meeting in June, 1878, the salary of the chancellor was reduced to $3,500 and all $2,000 salaries were cut to $1,800.

THE LANDED ENDOWMENT

During the early years the University had not begun to receive any income from its landed endowment. Governor David Butler on December 23, 1870, reported that the endowment lands "are now being selected." However, the report of the Board of Regents for February 28, 1871, contains this notation:

> "The Committee reported that the grant for the seventy-two sections was complete, but that an additional act of Congress was necessary to entitle the State to the 90,000 acres. A joint resolution was ordered to be drafted for presentation to the Legislature asking of Congress such an act."

On March 4, 1871, the Legislature formally petitioned Congress for the grant of land. William Adair, for many years president of the Board of Regents of the University, personally selected the lands to be included in the government's grants of land for the endowment of the institution. Unfortunately, these lands which had been carefully selected for the University were merged with the common school lands, under a state board other than the Board of Regents,—all called educational lands. The amount of land belonging to the common schools was always so great that there was a constant clamor on the part of the people to sell it. The idea was to attract people to the state and at the same time reduce the taxes. Could the University lands have been divorced from the common school lands they could have been retained until they would have brought large sums.

The Constitution of 1875 provided that none of the lands could be sold for less than $7 an acre. For many years the educational school lands were subject to lease for twenty-five years at 6 per cent of the appraised value, subject to reappraisement every five years, and the lessee had the right of purchase at the appraised value. As the value approached the constitutional minimum of $7 an acre, people found it more advantageous to purchase. The sale of the University lands, along with the common school lands, was made for one-tenth down and twenty years time on the balance. The Legislature of 1897 prohibited the further sale of the University lands, but unfortunately most of them had been disposed of before that time.

THE FIRST CHANCELLOR

Allen R. Benton, the University's first chancellor, undoubtedly had more foresight than most of the people of the time gave him credit for. It was the chancellor who in the second year of the University's history suggested the holding of farmers' institutes, the first instance of agricultural extension instruction in Nebraska and a movement

which in forty years was to grow to unusual pretensions. It was Chancellor Benton who at one time amazed the people of the state by suggesting the possibility that a larger campus should be secured for the institution, because of the rapid growth anticipated. While the institution did not grow as rapidly as Chancellor Benton had anticipated, there did come a time when it became necessary either to enlarge the uptown campus by purchasing high-priced land or else to remove the University bodily to the Agricultural College campus. In his first report the chancellor recommended that a woman be employed on the faculty, which was to find realization some years later.

Chancellor Benton was born in Cayuga County, New York in 1822. He was graduated in 1847 from Bethany College, Virginia, now in West Virginia, with first honors in mathematics and languages. For several years he was professor of ancient languages at Northwestern Christian University, Indianapolis, Ind. He was chancellor of the University of Nebraska from 1871 to 1876, resigning to return to Indiana where he later became president of the Northwestern Christian University, later Butler College.

REFERENCES

Annual Reports of the Chancellor to the Board of Regents, University of Nebraska. 1872-76.

CALDWELL, HOWARD W. *Education in Nebraska.* Circular of Information No. 3, 1902, of the United States Bureau of Education.

Catalogs of the University of Nebraska. 1872-77.

Laws of the State of Nebraska. 1867, 1869, 1871, 1877.

MORTON, J. STERLING and WATKINS, ALBERT. *History of Nebraska.* Volume 3. Western Publishing and Engraving Co., Lincoln. 1913.

Reports of the Board of Regents, University of Nebraska. 1871-79.

The University of Nebraska, 1869-1919. Semi-Centennial Anniversary Book. The University, 1919.

III

ESTABLISHMENT OF THE AGRICULTURAL COLLEGE

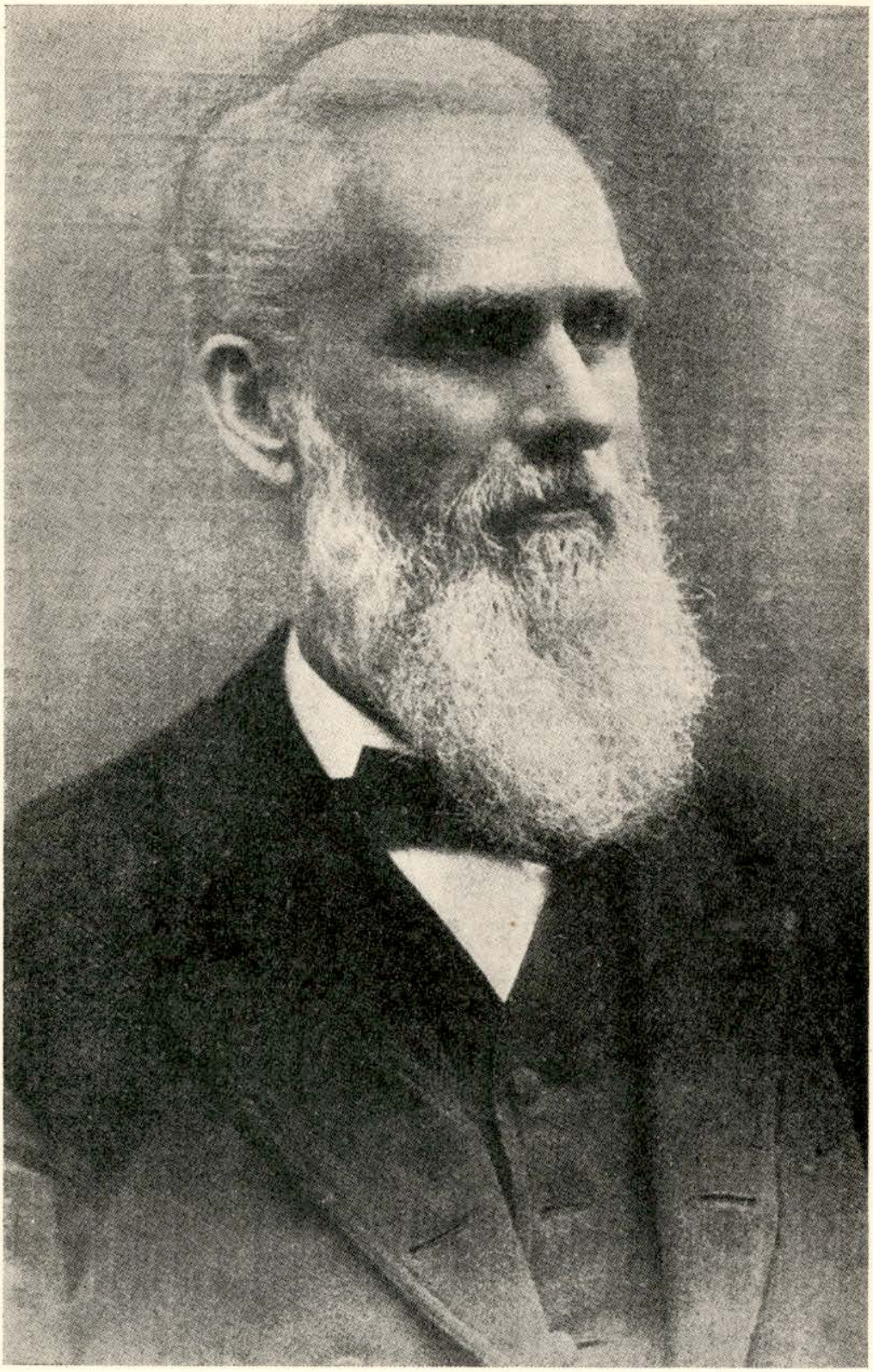
IT IS here that we draw the dividing line and proceed with the history of the Agricultural College rather than that of the University. Having seen the University established with its integral college units, it is now fitting to devote our attention primarily to the College of Agriculture, with only such references to the University as occasion demands.

It will be recalled that one of the primary purposes of the Land Grant Act of 1862 was to offer industrial education to the people, or as the Act stated, "to teach such branches of learning as are related to agriculture and the mechanic arts." It was more from a sense of duty that the Agricultural College was established than because of any particular demand for that kind of instruction. It was at least thirty years before agricultural instruction received any great amount of recognition.

During these years, it must be remembered, there was a general intolerance of "book farming" among both farmers and non-farmers. The teaching of farming in the schools was regarded as a somewhat futile task.

It was some time before the Agricultural College succeeded in inducing students to take its regular courses. The first year of the University the Agricultural College had not come into existence. On September 5, 1871, "S. R. Thompson was elected to the Chair of Theory and Practice of Agriculture [later to be made dean], but not to enter on his duties sooner than one year from the present," according to the report of the Board of Regents of that date.

In his report for the year ending in June, 1872, Chancellor Benton stated:



SAMUEL R. THOMPSON
First professor of agriculture and first dean of the college

"The Agricultural College as a co-ordinate branch of the University will also demand the attention of the Board. The requirements of the law creating these national schools make it necessary to provide for opening this College in the immediate future. It is important to determine accurately the limit of time prescribed by law, and not to allow the land grant to revert to the general government in consequence of neglect."

On June 25, 1872, the Agricultural College was established by the regents and ordered to be opened.

It appears that, altho the Agricultural College was formally opened for the year 1872-73, there were no regular students. That year a course of lectures was given, however. In his report Professor Thompson says:

"A small number of students have entered for the regular course in Agriculture, but for the present year have been pursuing preparatory studies chiefly. The work of agricultural instruction proper, has consisted of a course of lectures on vegetable physiology with reference to tree growing, and a course of popular lectures on agricultural chemistry. These lectures were very well attended. In general it is our intention to furnish instruction in any department of agricultural instruction which may be demanded, without, for the present, insisting on regular courses of study; yet providing a regular course for all who wish it."

So the second year of the University passed by, apparently without any very enthusiastic enrollment in agriculture. The third year seems to have turned out likewise, for the report of Chancellor Benton for the year ending June, 1874, stated that "the special instruction belonging to this department has not yet been in demand, and no solicitation has been used to urge students into this course of study." Professor Thompson in his report for the same year stated:

"But few students as yet have shown a disposition to take agricultural studies, and these only in the Preparatory department. I have seen a number of students who desire to attend the Agricultural School as soon as they can be accommodated with boarding on the farm, and can have employment so as to earn a part of their expenses. When not otherwise engaged, I have taught classes in the Academic department."

But the following year, 1874-75, fifteen students entered upon the agricultural course of study. These students enrolled gradually during the term, Charles Brainard being the first to take up the work. The cause of this unprecedented demand for agricultural knowledge was due largely to the fact that the University had come into possession of the present Agricultural College farm at the opening of that school year and besides providing the students with an economical place to board and room actually offered them remunerative employment. In fact, Chancellor Benton stated that the enrollment in the Agricultural College would have been still greater had it been possible to accommodate the students at the farm house.

THE FIRST COLLEGE FARM

This brings us to the subject of the college farm. It will be recalled that the Legislature in establishing the University provided "that the Governor shall set aside two sections of any agricultural college land, or saline land, belonging to the State, and shall notify the State Land Commissioner of such reservation, for the purpose of a Model Farm, as a part of the College of Agriculture, and such land, so set apart, shall not be disposed of for any other purpose." For some years it was evidently the idea that some of the state lands or land forming the endowment of the University could be set aside and used for a model farm. Some of this land was actually selected and used for a while. There is this notation in the report of the regents for June 25, 1872, the same day the Agricultural College was officially established and ordered to be opened:

> "After a report from the Land Committee, on motion of Regent Maxfield, the land selected by the Committee for a model farm was approved, and the Governor requested to set it apart for the use of the University."

Two sections of land were set aside for the farm about this time. J. S. Dales, the present secretary of the Board of Regents and a member of the University's first graduat-

ing class, recalls that it was in at least two or three parcels, but the bulk of it was in the neighborhood of the present fair grounds.

During the years 1872-73 something was accomplished along the line of actual farming on the original farm belonging to the college. When, on June 25, 1872, the Agricultural College was established and ordered to be opened, $1,000 was appropriated for improvements. Out of this $1,000, but $63.40 was expended on farm improvements, $44 of which went for breaking the land. Money to the extent of about $500 was expended under the direction of the chancellor, however, for "things not specially used in or belonging to the Agricultural Department, but in other departments as well," including philosophical apparatus, chemicals, etc. The balance of this first appropriation went back into the treasury, but at the December meeting of the regents another appropriation of $2,000 was made and Professor Thompson, who was now in charge, was directed to buy implements and hire a farmer to take charge of the farm.

Anderson Root of Cass County was engaged at $50 per month as the "farmer." He began work February 1, 1873. Mr. Root was "an experienced and successful farmer, and came recommended by a large number of the leading men in his county," according to Professor Thompson. A three-horse team for plowing and breaking was purchased for $435. The starting of the work on the farm was quite an event. A number of the implement companies gave implements, or threw off part of the regular price. Individuals promised various donations. Governor R. W. Furnas and Mr. Abbey of Richardson County, and J. D. Spearman of Sarpy County gave Poland China pigs. Hon. John Taffe gave a quantity of imported sugar beet seed, while Senator Hitchcock supplied the college with eight volumes of Congressional documents and some seeds. Volumes of reports were received from the boards of agriculture in various states.

Farming operations were under way in the summer of 1873. In his report for the year ending June 26, 1873, Professor Thompson states:

"The land broken east of R. R. last season was plowed deeply and 6½ acres of it sown to wheat and 4½ planted in corn. The nine acres remaining of that piece east of R. R. has been broken and planted in sod corn. For the purpose of keeping the team employed until the breaking season, 16 acres of land contiguous to ours was rented at $2 per acre and planted in crops. The crops now in the ground are: 23 acres of corn; 5 acres in oats; 6½ in wheat; ½ acre in sugar beets (4 kinds), and about an acre in garden vegetables and experimental patches of wheat, barley and oats, sown with seed imported from Europe and furnished us by the National Agricultural Department at Washington. With the exception of one piece of corn, which has been injured by the squirrels, the crops are all in excellent condition. In addition to farm work, the Farmer has done considerable team work, plowing, dragging and cultivating on the University campus."

EXPERIMENTS WITH SUGAR BEETS

This year, 1873, marked the beginning of agricultural experimental work, now carried on on such a large scale at the Agricultural College. The sugar beet industry which was many years later to become of great importance in the North Platte Valley was the subject of much inquiry, even at this early date. In his report Professor Thompson states:

"During the spring and summer I have taken it upon myself to secure a thorough and extensive trial of the capabilities of our State for the production of beets suitable for the manufacture of sugar. With this end in view, I presented the subject to the attention of the State Board of Agriculture at its last meeting, where I met with a cordial response and instant co-operation. Gov. Furnas, President of the Board, immediately ordered a quantity of seed from Europe, notice was given through the press and in response to requests I have distributed seed to something over 100 different persons in twenty counties.

"I have written a number of articles for the papers, and in every way in my power endeavored to bring the value and importance of this experiment to the attention of the general public.

"Persons receiving seed agree to cultivate, and report to the State Board, sending specimens of beets to the Agricultural College for analysis. It will be seen that this arrangement will bring a large amount of additional labor upon the faculty of the Agricultural College, but in view of the great importance of the experiment, it has seemed to me that it ought to be undertaken. In sending out this seed, I paid $6.32 postage, which I have not charged in my account, since I was not certain that it was a legitimate expenditure under my department or not. I would be pleased to have the Board instruct me on this point."

The following year Professor Thompson was obliged to report that the results achieved from distributing the sugar beet seed had been so meager that the State Board of Agriculture did not think it wise to continue it another year, altho he personally believed ultimate success would greet the experiment. The half acre in sugar beets on the farm yielded at the rate of ten tons an acre. "Of the various new kinds of small grains which we tried last year, but one kind of oats was thought worthy of trial again this year," Professor Thompson stated in his report for the year ending June 23, 1874. "We have now growing and in good condition, small plats of two new kinds of oats, one of barley and one of wheat. . . . The six acres we had in white Mediterranean wheat produced 101 bushels of superior wheat. Part was sowed again the present year, and the remainder sold at an average price of fifteen cents above the ordinary wheat. Some of it which we had ground produced flour not inferior to winter wheat."

In the grasshopper times of the seventies Prof. Samuel Aughey was giving some attention to the injurious insects of the state, laying a foundation perhaps for the economic entomology of today. Among the insects with which he concerned himself were the Rocky Mountain locust, the chinch bug and the Hessian fly.

WHAT KIND OF A FARM?

There was at this time considerable discussion as to just what kind of a farm the college farm should be. This same question was to prove a troublesome one for years. In his report for 1873 Professor Thompson raises the question:

"In planning our future work in the Agricultural College, the first question to be settled is, shall we aim to present a model farm, beautiful in its location, harmonious in its arrangements, exact in its divisions, neat in its keeping, and profitable in its working, or shall we arrange for an experimental farm, where it shall be our main business to discover new agricultural truth, rather than to exhibit what is old. The model farm will make the best showing to the general public and will incur less expense, but in the long run the latter will be of more real service to the State."

PURCHASE OF THE PRESENT COLLEGE FARM

The land set aside for a "model farm" was not considered particularly desirable, and efforts were being made to secure another farm. About September 1, 1874, the college came into the possession of the present college farm by purchase from Moses M. Culver. Professor Thompson's question as to the kind of a farm which should be built up was apparently not entirely settled. Experimental work was to be carried on, but it was the hope that the farm should also be made entirely self-sustaining. Regarding the purchase and development of the new farm there is this notation in the report of the Board of Regents for 1874:

"At its session, June 23, 1874, the Board of Regents deciding that no sufficient portion of the two sections of saline land, which had been set apart by the Governor for a model farm was suitable for that purpose, a committee was appointed by the board to secure, if possible, a suitable farm for the college, to be paid for from the proceeds of the two sections named.

"A purchase of a well improved farm at a moderate distance from the University was effected. The farm contains 320 acres, for which $55 an acre was paid. The farm is well adapted to the purposes of the College, and is in a high state of cultivation, having over four miles of Osage Orange hedge, four to five years old; twenty-

five acres of young timber three and four years old; three hundred apple trees, fifty peach trees; a good stone house of ten rooms; a good frame barn, granary, etc.

"The provision made for the payment of this farm was by the sale of a portion of the saline land set apart for the use of a model farm. Of this land sale was made to the amount of $22,500, on such terms as the committee thought would enable the board to meet the payments on the land purchased for the College Farm.

"For improving this farm, furnishing teams, utensils, and well-selected breeds of cattle, and thus to enable the Agricultural College to accomplish effectively the work for which it was organized, the Board have appropriated during this year $6,800, which, with a former appropriation of $2,500, will furnish this department with ample appliances for experimental purposes, and after the present year, it is expected to make it entirely self-sustaining."

More light on this transaction is found in the regents' report for the two years ending December 1, 1876:

"That there may be a clear understanding of the farm, the cost of the same, and how paid, the following statement is submitted:

"It is doubtless well known that according to the law under which the University was organized, the Governor was authorized to select two sections of the public land for a model farm. This was accordingly done. The Regents, however, deeming no sufficient part of said land suitable for the purposes of a farm, decided to purchase a farm of 320 acres of M. M. Culver, east of Lincoln, for the agreed sum of $17,600. In part payment of such amount they traded a portion of the said two sections of land at an agreed price of $5,700, and also a certain lot in Lincoln, of which by some means they had become the owner, for $350 more, thus reducing the amount to be paid to Mr. Culver to $11,550. This latter amount they agreed to pay within five years from the time of purchase—June, 1874—with interest at 10 per cent, payable annually, and executed written obligations, in the form of notes, accordingly. The interest on these obligations has been paid as required.

"The remainder of the two sections of land, except about twenty acres, hereafter mentioned, was by them sold to other parties on five years time, with interest and time of payment the same as stated above, for the agreed sum of $16,800. The interest on said sum falling due annually has been paid to the extent of $720 only, as shown by the statement of the Treasurer. The said remaining twenty acres of land, together with the improvements thereon, was conveyed in part payment for the house erected on the farm during

the autumn of 1875, at the agreed price of $2,500. The house cost the sum of $3,895, and is commodious and substantial, very much enhancing the value of the farm."

The house mentioned above stood on the campus for nearly fifty years, being torn down in the fall of 1923. A note to posterity was discovered by workmen tearing down the house. The note was written on a block of wood and the block had been placed in the wall above one of the doors. It read:

"To whom it may concern: Know ye that this 15th day of December, 1875, that the sun shines bright and the roads are dry and you can work out in your shirt sleeves.—J. W. Beatty."

J. W. Beatty, it was recalled at the college campus, was one of the carpenters employed when the building was erected half a century ago by M. L. Hiltner.

There seems to have been considerable difficulty in collecting the money due for parts of the original model farm that were sold, and some of the contracts were cancelled, and the land resold. The report of the Board of Regents for the two years ending December 1, 1880, straightens the matter out. "The debt which matured June 25th, 1879, was paid," says the report, "and the title to the farm has been made perfect. The appropriation made by the legislature of 1879, with other funds realized from the sale of lands set apart for that purpose, was applied in discharge of the debt, and the funds and securities remaining in the hands of the Regents were transferred to the State Treasurer, as directed in the act of the Legislature making the appropriation." The Legislature had appropriated $8,000, which together with $5,984.50, evidently received from the sale of parts of the old farm, was sufficient to wipe out the debt on the Culver farm. Securities, presumably representing mortgages on the parts of the old farm which had been sold, were transferred to the State Treasurer, to reimburse the state for the legislative appropriation.

In June, 1875, Professor Thompson reported that there were 171 acres of crops "now in the ground," including 55

acres of wheat, 18½ acres of oats, 19½ acres of barley, 68 acres of corn, 3 acres of broom corn, 1 acre of sugar beets, and 6 acres of miscellaneous crops. "These all, except the sugar beets, which the grasshoppers twice destroyed, are in a highly promising condition at this writing," he stated.

IMPROVING THE FARM

The "thorough-bred" cattle owned by the college included a Shorthorn bull named "Excalibar," a Shorthorn heifer "Hasty," a Devon bull "Oxus," a Devon heifer "Dianthus," an Ayrshire bull "Haylord," an Ayrshire heifer "Nettie," a Galloway bull "McNeil," and a Galloway heifer "Snowflake."

Hogs were represented by the Essex, Poland China, and Berkshire breeds, about twenty-four in all. In poultry there were "fair specimens of buff Cochins, dark brahmas, light brahmas, Houdans, black-red game bantams, and white bantams."

The new farm demanded a number of improvements. In his report Professor Thompson stated:

"The farm was found to be in a fair state of cultivation, but excessively weedy, and most of the inner hedges grown up with grass. A systematic war of extermination has been begun upon the weeds, and a portion of the hedges put under cultivation. There were not funds at command to justify more. The piggery which was on the road front, and in plain sight from the farm house, has been removed to the grove west of the orchard. . . . A pasture containing about fifteen acres, lying near the farm, has been enclosed by a four-board fence. Cost $283.45. A cattle shed, twelve by forty, has been built adjoining the barn, and the small barn-yard enclosed by a high board fence. Cost $97.30. The poultry house on the old farm was moved up and supplied with a spacious yard, surrounded by a lath fence six feet high. Cost $119.73. The stone kitchen, attached to the farm house, but hitherto unfinished, was floored and plastered outside and inside, a chimney built to it, and a bedroom partitioned from one end. This arrangement adds largely to the capacity of the house. The spouting on the main building was repaired and extended to the kitchen. Cost $161.35. A coal house, twelve by sixteen feet, adjoining the kitchen, was put up and

divided into small compartments for the use of students and the farmer. Cost $48.28."

A large well, six feet in diameter, was dug at the rear of the farm house, and water, drawn by a windmill pump, was piped to the piggery, pasture and farm house. A 75-barrel tank was placed at the well, to insure a supply of water at all times. "The whole scheme is a complete success, and practically solves the water problem for all time to come," said Professor Thompson in his report. "Entire cost, $591.23."

Among the articles of "illustrative apparatus" purchased for the department were a dynamometer, for testing the draft of plows and other agricultural implements, skeletons of a horse and a cow, "for use in studying the anatomy and physiology of domestic animals," and hay and stock scales, together with some books. It will be recalled that the large dwelling house, torn down in 1923, was added to the farm campus in the fall of 1875.

INSTRUCTION IN AGRICULTURE

But in the same way that Professor Thompson was in doubt as to whether the college farm should be simply a model farm or an experimental farm, Chancellor Benton was worrying himself as to what kind of a college the Agricultural College should be. Plainly, the first few years, there was not a great demand for agricultural instruction, and this same situation was to continue for many years. Whatever attraction the college farm had for students seemed to be due to the fact that it was a cheap place to live, and one could be furnished employment enough to pay at least a good part of one's college expenses.

The first agricultural courses offered in the College of Agriculture endeavored to strike a happy medium between a technical school and the arts college. There were, in fact, two courses of study, one a four years' course, running parallel with the scientific course in the University and leading to the same degree, and a shorter course which

could be completed in from three to six terms, according to the student's advancement. In the early days of the University there were three terms to each school year, a fall term, a winter term, and a spring term.

The four-year agricultural course, as announced in the catalog printed in 1874, was as follows:

FRESHMAN YEAR

First term—Geometry, bookkeeping, anatomy and physiology of domestic animals.

Second term—Geometry, stock breeding, English literature.

Third term—Vegetable physiology, botany, entomology.

SOPHOMORE YEAR

First term—Trigonometry and surveying, inorganic chemistry, farm economy.

Second term—Organic chemistry, analytical geometry, farm economy.

Third term—Analytical chemistry, physiology, surveying (field practice), horticulture.

JUNIOR YEAR

First term—Mechanical physics, French or Latin, logic or Chaucer.

Second term—Chemical physics, French or Latin, English literature.

Third term—Astronomy, rhetoric, French or Latin.

SENIOR YEAR

First term—Intellectual philosophy, zoology, agricultural jurisprudence.

Second term—Moral philosophy, meteorology, comparative physical geography, lectures on comparative anatomy.

Third term—Constitution of United States, landscape gardening, geology.

There was also a preparatory course of one year, evidently for those who were unable to enter the regular classes. It included:

First term—Arithmetic (commercial), algebra, English composition.

Second term—History of United States, algebra, elementary chemistry.

Third term—Elements of natural philosophy, arithmetic, elements of botany.

The two-year course in agriculture embraced:

FIRST YEAR

First term—Arithmetic, algebra, English composition.

Second term—Arithmetic (commercial), algebra or history of United States, elementary chemistry.

Third term—Elementary natural philosophy, vegetable physiology, elements of botany.

SECOND YEAR

First term—Bookkeeping, anatomy and physiology of lower animals, farm economy.

Second term—Meteorology, stock breeding, farm economy.

Third term—Tree culture, gardening, entomology.

Besides the weighty subject of agricultural jurisprudence, perhaps the most ambitious agricultural subject offered was that of farm economy. Farm economy did not resemble rural economics of the present day. In fact, in those days instruction in agriculture was divided into two main divisions, scientific agriculture, which included the application of the natural sciences to the business of farming, and farm economy, which seemed to include every subject that could not be classified under a head of its own. It included:

"Principles regulating the mechanical preparation of the soil, means of pulverizing the soil, of securing dryness in wet soils and moisture in dry ones; methods of seeding crops, of cultivating crops; adaptation of crops to particular soils, to market, to the condition of soil; use and care of farm implements; draining; laying out farms, construction of farm buildings, houses, barns, ice-houses, stables, henneries, piggeries, etc.; improvement of soils in chemical relations; animal, vegetable and mineral manures; methods of applying manure; succession of crops, rotation of crops, preparation of the soil for particular crops."

But the fact that students were difficult to secure led to a great deal of discussion as to the future of the Agricul-

tural College. The question of the kind of instruction to be given in an Agricultural College was indeed a bothersome one. Chancellor Benton in his report for the college year ending in June, 1874, paid considerable attention to this problem. Two definite plans in relation to agricultural instruction were suggested. The first plan was to make the Agricultural College more strictly a technical school. "Schools of law, of medicine, or engineering, do not require of their students a knowledge of all branches of literature and science, but only such preparation as will enable them to profit by the instruction they seek," said Chancellor Benton. "Why not organize the agricultural work on the same general plan, and thus popularize it far more than is possible, where a full course of four years is required, with a year of preparatory study to enter on it?"

The second plan, known as the Cornell plan, was to require of all students in the University a certain amount of agricultural instruction, and more extended work for those desiring it. The former plan appears to have been adopted, for in the report of the Board of Regents is this notation: "At its last meeting, December 16, 1874, the Board reduced the length of time required to obtain a college degree in this department from four years to three years; thus making the instruction more strictly technical in its character." University catalogs of the day are a little confusing as to this three-year course, in two catalogs the course being mentioned in one place as three years in length, and in another place in the same catalogs as being a four-year course. A one-year agricultural course was also listed about this time. However this may be, the college was shortly to make the main course a four-year one, besides one year preparatory.

FARMERS' INSTITUTES

"The Farmers' Institute stands for better farming, more comfortable homes, a higher degree of intelligence, and a more noble citizenship among the farming people. The Nation has always at

critical times in the past looked to the farm for many of her great men. She must continue to do so in the future. The Farmers' Institute seeks to assist in promoting larger agricultural production and higher standards of living, so that the boys and girls will love farm life, seek an agricultural education, and return to their homes upon the land, rather than be swallowed up and lost in the crowded cities. Any subjects that directly assist in this movement are proper for the Farmers' Institute. The main features must be crop production, soil tillage and fertility, livestock, poultry, fruit growing, road making, home economics, and other subjects of a similar nature."—From the first report on Nebraska Farmers' Institutes, 1906.

The farmers' institute was one of the great agricultural forces in Nebraska, and had its beginning in this period. Sponsored largely by the University in its earliest days, it was the first attempt to carry University instruction to the people of the state. For nearly half a century it was a vital force in hundreds of communities. The village church, or the village hall, or the schoolhouse was often packed to the doors by the people of the surrounding county, who considered the coming of the institute an event as great or greater than the county fair or the circus.

Today the institute is no more. It is practically obsolete, swallowed up in the tremendous expansion of agricultural extension. During the forty years that the farmers' institute enriched the country life of this state, it was an organization of ideals, as the quotation at the beginning of this section, from the University's first report on Nebraska farmers' institutes, published in 1906, indicates. But as time goes on people are going to wonder more and more what sort of an institution a farmers' institute really was, and something of its veriest beginnings, long before it reached its great culmination in the early 1900's.

The farmers' institute movement began before the Agricultural College was hardly in operation. In fact, the absence of students in this department seemed rather responsible for the idea of carrying education to the people, even if they did not exert themselves enough to come to

the college to get the education. It appears that it was Chancellor Benton, the first chancellor of the University, who conceived this happy idea. In the chancellor's annual report to the Board of Regents for the year ending June 25, 1873, the second year of the University's operation, there is this important recommendation:

"For the purpose of giving publicity to the work of the Agricultural College, and for promoting intelligence among the farming class, I would suggest the feasibility of holding institutes in various parts of the State, during the winter season. The Professor of Agriculture, aided by such assistance as he may obtain, can, I am persuaded, promote essentially the cause of industrial education throughout the State.

"I do not see why such an extension of our work would not be entirely legitimate; and if zealously and efficiently done it would undoubtedly redound to the advantage of the University, and confer lasting benefit on the localities where they may be held.

"There are organizations of farmers in various parts of the State, which would, without doubt, gladly make all the necessary arrangements for holding such meetings as I have suggested.

"There is prevailing in all the States an opinion somewhat adverse to theoretical farming, and a latent distrust of the utility of schools for the industrial class. This can be overcome in a large measure by the free interchange of views between our agricultural professors and the farmers of the State; and thus we can secure increased patronage to the classes of the agricultural school.

"As a beginning it might be profitable to have such an institute at the University building, sometime in the winter; and carefully prepared papers and addresses on the various topics connected with agriculture and horticulture might be presented from experienced persons from abroad, as well as by the professors of the University. The importance of having the Agricultural College possess the favor and confidence of the people at large cannot be too highly estimated, and whatever will contribute to this end should be promptly accepted."

Here apparently was the first mention of agricultural extension. It will be recalled by our readers that at this time the Agricultural College had not yet secured its first regular student, for in the same report Prof. S. R. Thompson stated that "a small number of students have entered

for the regular course in Agriculture, but for the present year have been pursuing preparatory studies chiefly." In the report for the next year, ending June, 1874, Chancellor Benton was obliged to state of the Agricultural College: "The special instruction belonging to this department has not yet been in demand, and no solicitation has been used to urge students into this course of study." But one of the duties of the "Professor of Agriculture" during the winter term had been the holding of agricultural institutes.

This indeed appears a rather remarkable bit of forethought on the part of the University's first chancellor. Most people, if one were to ask them, would say that agricultural extension has been a development of only the last few years, but here was a branch of agricultural extension actually in operation before the Agricultural College was having any regular students, and before the present Agricultural College farm had been purchased.

During the winter term of 1873-74, the third year of the University's operation, four farmers' institutes were held. One was held at Dorchester, Saline County; one at Palmyra, Otoe County; one at Seward, Seward County; and one at Lowell, Kearney County. "The last mentioned, coming after spring work had begun, had a small attendance," says Professor Thompson in the report to the regents. "The others were well attended and seemed to give excellent satisfaction. The day sessions were occupied in discussions on practical farm work, the evenings to more general work —essays, lectures, etc. At these meetings lectures were delivered by Governor Furnas, Hon. A. K. White, Chancellor Benton, B. F. Kinney, Hon. J. M. McKenzie, and by the professors in the Agricultural College. Valuable essays were contributed by H. K. Raymond, of Otoe County, Judge Gilmour, of Cass County, Hon. Uriah Bruner, of Cuming County, and others. These essays have been widely copied in the agricultural and other papers—a pretty good indication of their value. At Dorchester, the last evening, the large school room was so filled that not even standing room

SOME FORTY YEARS AGO

The college as it appeared nearly a half century ago. The two main buildings are the dormitory and the stone house

was left, and many had to go away unable to obtain entrance. So satisfactory were these meetings to those in attendance that arrangements were made to hold others in the places next winter. Besides these farmers' meetings, I attended six teachers' institutes during the time I was not teaching in the University. . . . At each of them I spoke at least one evening on the claims of agricultural education and regarding the work of the Agricultural College."

In the same report Professor Thompson forecasts the need for agricultural extension:

"We should not solely seek to discover new agricultural truth and to fit young men for illustrating its value in the community, but we should make a special effort to disseminate agricultural knowledge through the community. This we may do in several ways, as by publication of reports, and through the press, and by the public lectures of our teachers. There seems to be no good reason why the teaching of our professors should be confined entirely to the class room. The great public who support the University are certainly entitled to receive a share of the instruction the University may have to impart. If only knowledge is spread abroad and improvement stimulated, what matters it, whether all be done in the conventional way or not?"

PROFESSOR THOMPSON

There was one outstanding figure in this period of the development of the Agricultural College, and that was Prof. S. R. Thompson, the first professor of agriculture and first dean of the college. Professor Thompson was not only a dominant figure in connection with the Agricultural College but also prominent in educational affairs in the state. Perhaps not a great deal might be known about Professor Thompson were it not for a sketch contributed by Dr. Charles E. Bessey to the annual report of the Nebraska State Board of Agriculture for 1896. It in turn was partly from a sketch prepared by President Ferguson of Westminster College, Pennsylvania. The facts, as presented here, are from Professor Bessey's sketch. Professor

Thompson gave to Nebraska the best years of his life, from thirty-eight years to fifty-one years of age.

We learn that he was born in Crawford County, Pennsylvania, April 17, 1833. He graduated from Westminster College in 1863. Before graduation, he served as superintendent of the Crawford County schools. He was professor of natural science in the Edinboro State Normal School from 1865 to December, 1867. Later he was engaged in high school work at Pottsville, Pa., and then went to Marshall College, Cabell County, West Virginia, to reorganize it as a state normal school. After three years there he came to Nebraska.

Professor Thompson resigned from his position at the Agricultural College in 1875. For a year he was principal of the State Normal School at Peru, Nebraska, and state superintendent of public instruction in Nebraska from 1877 to 1881. He also filled out the term of Prof. W. W. W. Jones, as superintendent of the Lincoln (Nebraska) city schools, when Professor Jones succeeded him as state superintendent. He again resumed the professorship at the Agricultural College and from that he was called to the professorship of physics at Westminster College in June, 1884. Professor Thompson died October 28, 1896. Dean Bessey paid him this tribute on the occasion of his death:

"We need not go back to those early days and criticize the work of those who were compelled to make educational bricks without straw, and while we may readily admit that mistakes were made, we should none the less honor those who toiled and planned. Time has shown that those who once criticized Professor Thompson's work were themselves as far as he from having the true solution of the problems of that time. As we look back to those days of small things, those days in which the beginnings were made, we are led to honor the man who shrank not from the labor which was laid upon him. As I look over the country and compare the work done by Professor Thompson in this young University, with that accomplished by men in similar positions in other institutions I am constrained to say that Nebraska was very fortunate in having the services of so cultured a man.

"While in Nebraska Professor Thompson organized the State Weather Service, which with varying fortunes has existed to this day, growing in these later years into the splendid service with which almost every Nebraskan is familiar. This work might be honor enough, but to it we may add another. In the early days he began urging the people of the state to engage in farmers' institutes, in which he himself took active part. As I go about the state I frequently find a pleasant memory still lingering of the pleasant face and voice of the dead teacher.

"Personally, Professor Thompson was tall, of pleasant manner and with a scholarly bearing. In his later years his white hair and full beard of almost snowy whiteness gave him a venerable look. A kind face from which looked out the clear, soft eyes which betokened the sympathetic friend, completes the picture of the man who has gone from us."

There was still another man, who, besides Chancellor Benton and Professor Thompson, was listed as a member of the faculty of the Agricultural College. That was Professor Samuel Aughey, professor of chemistry and natural sciences, who officiated in the Agricultural College as well as the academic department. Professor Aughey gave a course in elementary chemistry, inorganic and organic, and also took up the application of chemical science to agriculture. He also offered instruction in geology and botany to students of the Agricultural College. Professor Aughey graduated from Pennsylvania College in 1856 and from 1867 to 1871 was in the employ of the Smithsonian Institution. For several years during his connection with the University of Nebraska he taught the classes in German and "devoted his remaining spare time to the collection of an herbarium of the flora of the state." He resigned in 1883, becoming territorial geologist of Wyoming.

REFERENCES

Annual Reports of the Chancellor to the Board of Regents, University of Nebraska. 1872-76.

Annual Reports of the Nebraska State Board of Agriculture. 1873 and 1896.

CALDWELL, HOWARD W. *Education in Nebraska.* Circular of Information No. 3, 1902, of the United States Bureau of Education.

Catalogs of the University of Nebraska. 1872-77.

Nebraska Farmers' Institutes, First Report. University Bulletins, Series XI, No. 22. University of Nebraska, 1906.

Reports of the Board of Regents, University of Nebraska. 1871-81.

The University of Nebraska, 1869-1919. Semi-Centennial Anniversary Book. The University, 1919.

IV

THE INDUSTRIAL COLLEGE AND THE EXPERIMENT STATION

THE fifteen-year period from about 1875 to 1890 was marked by at least three important developments in the history of the College of Agriculture. One was the changing of the name of the Agricultural College to that of Industrial College and the consequent development of an engineering department within the Industrial College, as well as the reorganization of the work of the college. The second was the founding of the Agricultural Experiment Station with government funds supplied under the Hatch Act. The third important development was the erection of Nebraska Hall, a building to house the Industrial College, on the uptown campus of the University.

At the beginning of this period the Agricultural College was in operation but certainly in none too prosperous a condition. Its biggest attraction still remained the free rooms in the "dormitory" and the labor supplied students on the farm. There were two buildings of consequence at the farm, one the little stone house that was on the property when it was purchased by the University and the other the large frame house, erected in 1875, which was torn down in the fall of 1923.

"At the farm house he [a student] can find a pleasant home, far enough from the city to be out of the way of its temptations to idleness and worse, and yet near enough to enjoy all its literary and public advantages," reads the catalog printed in 1875. "With all of the advantages of quiet and retirement for study, the student has yet the opportunity to be part of a young and growing university."

The catalog states that "students in this college will be required to work at least two hours each day for five days in the week, unless excused for good reasons. This labor

will be paid for at the rate of from ten to fifteen cents an hour, according to the individual's skill and fidelity. Under this arrangement a faithful student may earn fully half his necessary expenses. . . . This labor is designed to be educational in its character, and is planned with reference to illustrating and enforcing the lessons given in the class-room."

For a while the students at the farm paid $3 a week for board, which included the use of rooms, partially furnished. Later this seems to have been reduced to around $2 a week. The rooms at the farm house were furnished with a "stove, bedstead, table, two chairs, and a coal bucket." The occupants of the room had to furnish everything else. The rooms in the dormitory at the farm were listed as being "free" but there was no provision for "self-boarding" at the farm.

The downtown campus of the University was still the headquarters of the Agricultural College for many years. The early catalogs provided that "class recitations in purely agricultural studies will be either at the farm house or at the University building, as may be found most convenient. All other recitations will be made to the regular professors in the academical department." As more ambitious agricultural courses were established, they appear to have been housed in old University Hall, or in Nebraska Hall, erected later on.

An advantage offered to the students of agriculture for a while was the opportunity to teach school during the winter. For a brief period it was the custom in this department to hold school in the fall, spring, and summer. Students could then secure positions in the country schools of the state for the winter. Another purpose behind this plan was the idea that students should have some experience with the actual growing of crops and could be furnished more employment during the summer. This plan was announced in the catalogs published in 1875 and 1876, but Chancellor Benton in his report for 1876 con-

sidered it a questionable advantage, and it was apparently abandoned soon thereafter.

The recommendation of Chancellor Benton and the notation of the Board of Regents that the agricultural course should be of a more technical nature does not seem to have been followed out. In fact, the catalogs from 1875 to 1879 stated that "it will be seen that students taking the full course will study agricultural studies about one-third of the time; literary and scientific studies about two-thirds." Among the somewhat unusual subjects listed in the agricultural course of 1878 were fish culture, ornithology, history of agriculture, moral philosophy, and international law. The catalog published in 1877 announced a four-year course in agriculture, besides one year preparatory, and a shorter course of two years, besides one year preparatory.

The first graduate of the Agricultural College was Harvey Culbertson, who was afterward to become acting professor of agriculture and superintendent of the farm, and later professor of horticulture. In the catalog of 1874-75 Mr. Culbertson was listed as the only fourth-year student in the Agricultural College, also holding the position of "foreman of the garden." In his report for 1875 Chancellor Benton announced that "there will be no graduating exercises, although one student will complete the course prescribed for graduation in the Agricultural Department." The following year the chancellor recommended that Mr. Culbertson be given "the diploma of Bachelor of Agriculture at the approaching commencement." Mr. Culbertson had previously studied in Indiana, and came to Nebraska with advanced credit. Mr. Culbertson is reported to be living at El Cajon, Cal. The second graduate of the Agricultural College was Charles Brainard, who received his degree in June, 1877. Mr. Brainard took all of his work at the University of Nebraska. He now lives in Denver. Students listed in the catalogs from 1875 to 1880 as taking the course in agriculture numbered for the respective years 15, 13, 16, 9, 9, 12.

ESTABLISHMENT OF THE INDUSTRIAL COLLEGE

But a legislative enactment that was to change the complexion of the Agricultural College for many years to come was that passed by the legislature in 1877. It provided for "an industrial college, embracing agriculture, practical science, civil engineering, and the mechanic arts." It will be recalled that in 1869 the Legislature had provided for a College of Agriculture, and also a College of Practical Science, Civil Engineering and Mechanics. The latter had not yet been established, but the new law combined it with the Agricultural College. Thus things were to remain for more than thirty years.

The original land grant act passed by Congress had provided for "such branches of learning as are related to agriculture and the mechanic arts." Perhaps it was the idea that the provision for instruction in the mechanic arts must be complied with or perhaps it was the idea that since the Agricultural College was not succeeding particularly well, it might be strengthened by combining with it another line of activity.

The following excerpts from the report of the Board of Regents for the two years ending in 1878 throw some light on this point:

"It is true that a school of agriculture has for many years been established and in connection therewith a model farm. . . . Owing, however, to the seeming necessity of making the farm self-sustaining, so far as possible, very little has been done during the past two years not looking to immediate profit. It is submitted to your consideration if the agricultural interests of the state do not demand a different management of this particular institution. It has already cost the state a large amount of money, not less than $25,000. Its management should therefore benefit the whole state, not by raising grain for sale, but by experimenting in those directions most beneficial to the whole state. . . .

"While, as shown by the above, something has been done in the department of agriculture, nothing whatever has been attempted in the direction of teaching those branches of learning related to the

mechanical arts, and nothing can be done until a suitable building is provided therefor. . . . Such schools, under the act of congress before mentioned, are in successful operation in connection with the Illinois Industrial and Cornell Universities. They ought to become successful and valuable departments of the University of Nebraska. It is evident that the act before mentioned had in view in a very large degree the practical education of the industrial classes, not of course in exclusion of other branches of learning, but in addition thereto."

It was many years before much semblance of an engineering department began to appear, and ten years before the Industrial College had its own building. Lieut. E. S. Dudley, who was the first army officer detailed to look after the military department of the University under the land grant act, was chosen by the Board of Regents in April, 1877, to give instruction in civil engineering the following year at a salary of $400. At the end of that year, however, he was relieved of such duties, because of a retrenchment in expenditures, and that instruction was handed over to other members of the faculty without additional compensation.

Professor S. R. Thompson had resigned from the position of both professor and dean of the College of Agriculture in December, 1875. This professorship remained vacant until a meeting of the Board of Regents in June, 1878, when Harvey Culbertson, "who theretofore had given instruction in the agricultural department, was made acting professor of agriculture at a salary of $400. His duties as superintendent of the farm at a salary of $600 continuing." Professor Thompson returned to the service of the University and was both professor and dean of the Industrial College in 1882.

Members of the faculty who carried on instruction mainly in the academic college of the University found a place among the list of faculty members of the Agricultural and later the Industrial College. Among such, in 1877, were Hiram Collier, professor of chemistry and physics; H. E. Hitchcock, professor of mathematics; Samuel Aughey, professor of natural sciences; G. E. Bailey, first a tutor and

then professor of agricultural and analytical chemistry; and First Lieut. Edgar S. Dudley, professor of surveying and civil engineering.

FACULTY DISSENSION IN THE UNIVERSITY

These were troublous days in the University, with many changes in the faculty. Chancellor Benton had been succeeded in 1876 by Chancellor Edmund Burke Fairfield. In January, 1882, the Board of Regents dismissed three of the professors in the academic college, and followed this up the following June by dismissing Chancellor Fairfield himself. Clement Chase in the *Semi-Centennial Anniversary Book* of the University of Nebraska tells something of this period:

> "The administration of Chancellor Fairfield at Nebraska was a somewhat tempestuous period in the history of the University. It was characterized by a factional struggle in the faculty, accounts of which may be read in the Omaha and Lincoln papers of the day. On the one side were the head of the institution and his supporters, largely of denominational school training, and on the other side were the young and vigorous champions of non-sectarianism in the conduct of the institution and of new and liberal views in education. Those of the radical faction who were chiefly involved were three men of unusual brilliance, namely George E. Woodberry, of the department of English literature, later the noted poet and critic; Harrington Emerson of the department of foreign languages, to whom is chiefly due the nation-wide 'efficiency' movement and slogan of the last decade; and George E. Church of the chair of Latin. The upshot of the factional struggle was that all four men, the chancellor and the three brilliant young professors, left the service of the institution."

A new chancellor, Irving J. Manatt, was elected at a meeting of the regents December 18, 1883. Prof. H. H. Nicholson was elected to the chair of chemistry and physics in July, 1882. Mr. Nicholson was to play a large part in the Industrial College and Experiment Station later on. Prof. Samuel Aughey, who had been associated with the

academic and also the agricultural department as professor of natural sciences, tendered his resignation in 1883. On March 20, 1884 the resignations of both Prof. S. R. Thompson and Prof. Harvey Culbertson were received and accepted to take effect on September 1. At this meeting Col. E. P. Savage of Custer County (later acting governor of Nebraska) was appointed superintendent of the Industrial College farm.

A meeting of the regents on June 10, 1884, was eventful in that it marked the election of Professor C. E. Bessey, vice president of the Iowa Agricultural College, to the chair of botany and horticulture in the Industrial College. It is said that this election to the chair at Nebraska was without his knowledge. Professor Bessey was reluctant to leave Iowa, but a second offer in August, 1884, included the deanship of the Industrial College as well. His inaugural address was delivered at the University of Nebraska in September, 1884, and his active class work began in January, 1885. Professor Bessey was the outstanding figure in this period of the University's development and for thirty years was to play an important part in the agricultural affairs of the state.

"Pending the selection of a professor of agriculture, Mr. Henry H. Wing, B. Agr., of Cornell University, and assistant to Dr. Sturtevant at the New York Experiment Station at Geneva, was secured as instructor and began his work at the opening of the year," reads the chancellor's report of 1884. In March, 1885, Mr. Savage resigned as superintendent of the college farm and in June Mr. Wing was appointed instructor in agriculture and director of the farm. On June 15, 1888, the resignation of Mr. Wing as adjunct professor of agriculture and superintendent of the farm was accepted and John S. Kingsley was elected in December, 1888, to begin work July 1, 1889. "On July 19, 1888, the Board found it necessary to dispense with the services of Irving J. Manatt as Chancellor of the University," according to a report of the Board of Regents.

Doctor Bessey was elected dean of the academic faculty for the year beginning September 1, 1888, and he also became acting chancellor of the University. Doctor Bessey was now the leading figure in the development of the Industrial College and the University. Lewis E. Hicks, professor of geology, was now dean of the Industrial College.

We are concerned primarily with the development of the agricultural side of the Industrial College, but probably it will be worth while to take a look at the roster of the members of the faculty connected with the Industrial College. Most of them, it must be remembered, served also in the academic department. The catalog issued in 1889 lists the following: Lewis E. Hicks, geology and applied sciences, dean; Henry E. Hitchcock, mathematics; George E. Howard, history; Hudson H. Nicholson, chemistry; Lucius A. Sherman, English literature; Charles E. Bessey, botany and horticulture; Thomas Griffith, U. S. A., military science and tactics; August H. Edgren, modern languages; DeWitt B. Brace, physics; John S. Kingsley, agriculture and biology; Charles N. Little, civil engineering; Robert W. Furnas, forestry; Howard W. Caldwell, history; Rachel Lloyd, analytical chemistry; Ebenezer W. Hunt, rhetoric and oratory; Joseph A. Fontaine, romance languages; Amos G. Warner, political and economic science; Harry K. Wolfe, philosophy; and Bohumil Shimek, zoology. By this time the Industrial College had absorbed the scientific work formerly given in the Academic College. This will be discussed a little later, along with other changes in the Industrial College.

THE EXPERIMENT STATION

The important development of this period was the founding of the Agricultural Experiment Station, the federal government again coming to the aid of the agricultural colleges as it had done in the very beginning. By an Act of Congress approved March 2, 1887, $15,000 a year was

given to the land grant college or state experiment station in each state—or divided between such institutions in the same state—to promote original scientific investigation in the field of agriculture. The purposes of this so-called "Hatch Act" are stated in Section 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 adaptation and value of grasses and forage plants; 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 or experiments bearing directly on the agricultural industry 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."

Each state was required to make yearly reports of the results of the work and to publish bulletins at least once in three months. The law was known as the "Hatch Act" because the bill had been introduced into the House of Representatives by William H. Hatch of Missouri. The Nebraska Legislature accepted the provisions of the act by an act approved March 31, 1887.

But before going further, it would be well perhaps to outline in a brief way some of the earlier experimental work on the college farm. As our readers recall, some work of an experimental character had been carried on at the college farm, dating back to the first years of the college, when Professor Thompson had distributed sugar beet seeds to farmers. There was constant discussion as to whether the farm should be simply a model farm or an experimental farm.

In 1874 Professor Thompson recommended the following agricultural experiments as being most desirable to be carried out: (1) Best method of cultivating our ordinary grains; (2) testing new varieties; (3) new kinds of fruits and vegetables suitable for our soil and climate; (4) cultivation of tame grasses; (5) breeding of stock, especially hogs and cattle. In 1875 twenty-three kinds of grass and clover were sown to test their adaptability to the climate. Thirty-eight varieties of potatoes were planted. There were six kinds of wheat, ten kinds of field and sweet corn, fourteen kinds of beans, and ten kinds of peas.

What was probably the first report, published by itself, of experimental work in the Industrial College, appeared about 1880. It was a pamphlet of thirty-one printed pages, containing a description of the farm and its equipment, a statement of the instruction offered in agriculture, and the results of experimental work. Among other things, the experiments included a comparison of dry and soaked corn for pig feeding, cost of raising an acre of sorghum and of manufacturing it into syrup, test of varieties of wheat, depth of sowing grain, test of varieties of potatoes, test of varieties of sugar beets for feeding purposes, and a record of rainfall and temperature.

The coming of Professor Bessey to the University had done much to put the experimental work on a more definite basis, and in 1884 we find him outlining a program of experiments:

> "There are two classes of experiments and observations, viz.: 1st, those which are popular in their character, and which aim to reach immediate results; and 2d, those which are scientific in character, in which the aim is to discover some profound principle, or establish beyond dispute some fact in nature. The popular class of experiments includes those in which the relative productiveness of different varieties of plants is tested; those by which new varieties are brought into notice; those in which the relative values of different implements and tools are tested, etc., etc. Such experiments have a value, and when properly conducted a high value, but their value in any case is limited to narrow areas, and affected by many and constantly changing conditions. . . .

"The experiments and observations of the other class require much more time and care for their consummation, but their results when obtained have an accuracy and a wideness of application which give them a high value for all times and in all places. It would be well to draw a sharp line of demarkation between these two classes of experiments and then to adopt a fixed policy with respect to each."

The popular experiments suggested by the dean included:

1. Experiments with stock as to breeding and feeding.
2. Experiments with various kinds of grain crops.
3. Experiments with various kinds of grasses and other forage plants.
4. Experiments upon different modes of culture for various crops, etc., etc., etc.

The scientific experiments suggested by the dean were full meteorological observations, observations upon soil temperature, observations of the humidity of the soil, observations upon the percolation of water thru soils, chemical and physical analyses of soils, the fertility of soils as related to the texture and composition of the subjacent strata, the porosity or compactness of soils as affected by cultivation and by burrowing species of worms, insects, and rodents, the necessity and practicability of irrigation in various parts of Nebraska, the observation and study of the injurious insects of the state, the observation and study of the injurious fungi of the state, experiments upon fertilization and cross-fertilization of plants, and experiments upon proper temperatures for the germination of seeds.

Five *Press Bulletins* were issued by the Industrial College in 1885. They were entitled *Apple Blight, Twig Blight, or Fire Blight, The Premature Dropping of the Plum, The Condition of the Industrial College, The Industrial College Herd,* and *The Smut of Indian Corn.* Doctor Bessey prepared four of them. They were only short bulletins, about 200 to 400 words in length.

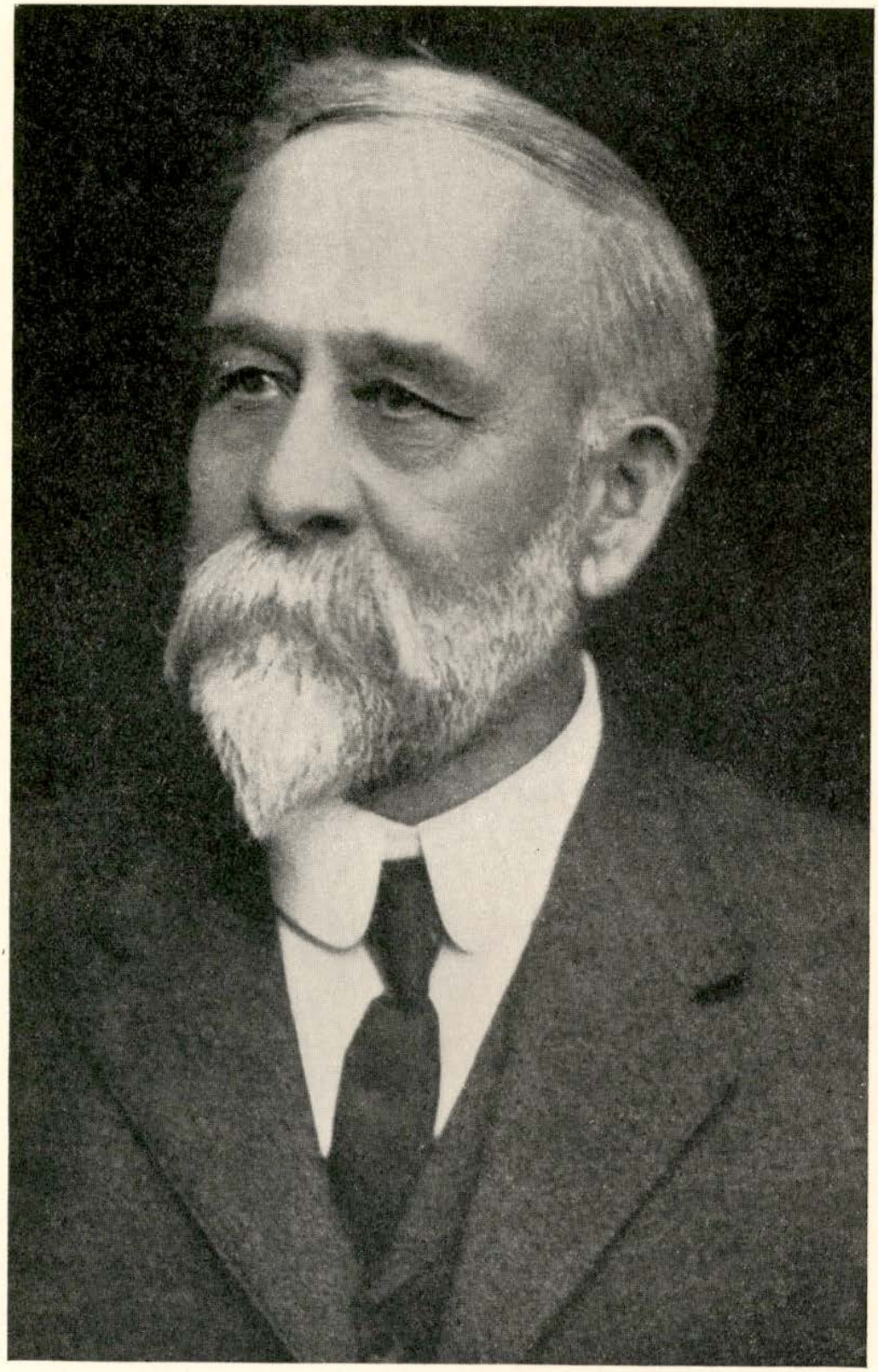
In 1886 Dean Bessey reported that in the popular series of experiments work had been undertaken with the breeding and feeding of stock, with the various kinds of grasses

and forage plants, and with the modes of culture for various crops. Along the line of scientific experiments, full meteorological observations and studies of the injurious fungi of the state were being made regularly. Steps had been taken toward making chemical and physical analyses of soils.

A feature of the experimental work about this time was the employment of Dr. F. S. Billings in 1886 to solve the question of the nature and remedies for "the disease of swine, commonly known as 'hog cholera'." Doctor Billings was the first scientist employed to give his full time to experimental work. Before this there had been a conference between officers of the University and the State Board of Agriculture relative to the establishment of a school of veterinary science. It is not apparent that such a school was placed in actual operation, altho veterinary instruction was given along with the regular agricultural courses. Regarding the appointment of Doctor Billings, the report of the Board of Regents states:

"At the June (1886) meeting, as a preliminary, the Board provided for the establishment of an experiment station for the investigation of the diseases of domestic animals, and authorized the committee to contract with Dr. Frank S. Billings, who had taken his degrees in Germany, and was highly recommended by some of the most distinguished masters in veterinary science in Europe, as its director, and appropriated $1,500 for salary and expenses up to April 1st, the term of his present engagement. Previous to his appointment, Dr. Billings had, at the invitation of the committee, availed himself of such accommodations as could be furnished him at the farm and the University building, aided by the valuable instruments, apparatus, and library, belonging to himself, to commence his investigations of the origin and nature of the swine plague or hog cholera."

Doctor Billings occupied three rooms in the main University building uptown for a laboratory, culture room and office. There was an animal house on the city campus of the University, and a small building devoted to animal work at the college farm. At this time it was estimated that the annual losses from swine plague in Nebraska



CHARLES E. BESSEY
For thirty years a leader in Nebraska agriculture

amounted to upwards of a million dollars, and on single farms it was not uncommon to suffer a loss of a thousand dollars in the course of a few months. In 1888 Doctor Billings published a voluminous bulletin of 400 pages on *Swine Plague*. A large part of the bulletin, however, was taken up with an altercation with D. E. Salmon of the United States Department of Agriculture over the disease. Doctor Billings gave up his work with the University on June 30, 1889, but was reemployed in 1891.

The first appropriation under the Hatch Act did not become available until March, 1888, but the Board of Regents had appropriated $3,500 for experimental work for the year beginning July 1, 1887. There was a little grumbling here and there that the Hatch Act did not afford more than $15,000 a year, but certainly that was better than depending on the Legislature. The working staff of the station, as given in the first annual report presented to the Governor January 26, 1888, included Henry H. Wing, agriculturist; Hudson H. Nicholson, chemist; Frank S. Billings, investigator of animal diseases; DeWitt B. Brace, meteorologist; Lewis E. Hicks, geologist; Conway McMillan, entomologist; and Charles E. Bessey, botanist.

The third annual report of the experiment station for the year ending January 24, 1890, affords a good idea of what the Station was accomplishing at the close of this period. Dr. Lewis E. Hicks in 1889 had succeeded Dr. Charles E. Bessey as director of the station. J. Stuart Dales served as treasurer, along with his other financial duties in the University. The working staff of the station was made up of Jared G. Smith, assistant agriculturist; Hudson H. Nicholson, chemist; Rachel Lloyd, assistant chemist; DeWitt B. Brace, physicist; Harold N. Allen, assistant physicist; Lewis E. Hicks, geologist; Lawrence Bruner, entomologist; Charles E. Bessey, botanist; and S. W. Perin, superintendent of the farm. The Experiment Station had drawn largely on the University faculty for members of its staff, in most cases small amounts being

added to their usual salaries. In June, 1888, the following salaries to be paid from the Hatch fund were allowed for the year ending June 30, 1889: Director $350, treasurer $400, chemist $200, meteorologist $100, geologist $100, investigator of animals diseases $3,500 (Mr. Billings resigned on June 30, 1889), entomologist $1,500. The rest of the $15,000 was to be devoted to experimental work, publication, and miscellaneous.

Sugar beets were rapidly coming to the front and we find the department of chemistry making efforts in this direction. Within the next few years two sugar factories were to be established in Nebraska and the subject was to be one of the most important to Nebraska farmers for several years. In March, 1889, Professor Nicholson distributed a large amount of beet seed received from the United States Department of Agriculture among the farmers of the state. A committee of the State Board of Agriculture, appointed to visit the station, reported in 1889:

> "The sugar beet industry, claiming and receiving as it now does so large a share of public attention at large, in the United States, is given careful and thorough investigation at this Station, showing unexpected and most gratifying results. The saccharine yield of Nebraska-grown beets is found equal with the best sugar-producing countries in the world. The yield in tons per acre, of beets, is also most gratifying. Sections of the State and soils heretofore thought not adapted, are found to be admirably so."

The chemistry department was also undertaking "an investigation of the soils and water of the state." The department of physics was paying special attention to climatological data. Doctor Hicks planned for his department soil surveys of the state and a study of irrigation. In economic entomology "the insects of economic relation to agriculture and horticulture were studied with a view to remedies for injurious species, and the increase and spread of beneficial ones." The botanical section of the station announced its work as consisting of a study of the

grasses and forage plants of the state, a study of the parasitic fungi of the plants of the farm and garden, a study and description of the woods of the state, a study of seed germination, and studies in plant physiology and pathology.

A list of the early bulletins affords some idea of the subjects with which the experiment station was concerning itself:

Bulletin No. 1—*Irrigation in Nebraska.* Lewis E. Hicks, 1888.

Bulletin No. 2—*Twenty-two Common Insects of Nebraska.* Conway McMillan. 1888.

Bulletin No. 3—*Southern Cattle Plague and Yellow Fever, from the Etiological and Prophylactic Standpoints.* Frank S. Billings. 1888.

Bulletin No. 4—*Swine Plague, Its Causes, Nature and Prevention.* Frank S. Billings. 1888.

Bulletin No. 5—*Some Injurious Insects of the Year 1888.* Lawrence Bruner. 1889.

Bulletin No. 6—*Report of Progress.* H. H. Wing. *Field Experiments and Observations for the Year 1888.* Jared G. Smith. *Meteorological Record for the Year 1888.* DeWitt B. Brace. 1889.

Bulletins Nos. 7, 8, 9, 10—*Original Investigations of Cattle Diseases in Nebraska, 1886-89.* Frank S. Billings. 1889.

Bulletin No. 11—*The Smut of Wheat and Oats.* Joseph C. Arthur. *The Smut of Indian Corn.* Charles E. Bessey. *A Preliminary Enumeration of the Rusts and Smuts of Nebraska.* Herbert J. Webber. *Notes on the Fungi of Economic Interest Observed in Lancaster County, Nebraska, during the Summer of 1889.* Roscoe Pound. *Observations on the Cottonwood.* Albert F. Woods.

Contributors to Bulletin No. 11 were to achieve more than ordinary prominence in later life. Roscoe Pound was to become dean of the Harvard Law School, and Albert F. Woods was to become president of the University of Maryland. At this time Mr. Pound was assistant in the botanical laboratory and Mr. Woods was a senior student in botany. Arthur, Bessey, and Webber all became well-known names in the field of botany.

MAKING OVER THE INDUSTRIAL COLLEGE

During the five years from 1885 to 1890 Doctor Bessey made over the Industrial College. All this time, it must be remembered, there was a constant struggle for both students and money in the Industrial College. In 1885, an attempt was made to separate the Industrial College from the University and move it to another place. In 1889 the attempt was repeated, but it again failed.

The report of the State Board of Agriculture for 1885 tells something of conditions at the college farm at this time, as well as being indicative of some of the criticism of that day:

"Your committee appointed at the regular meeting of the State Board in January, 1884, to visit the Agricultural College Farm and report its condition, and make such recommendations as would, in our opinion, be to the best interest of the institution, beg leave to report as follows:

"Your committee visited the farm in January, 1884, and found a large per cent of the cattle, grades, and many of the thoroughbreds, inferior in their respective classes, and with a very few exceptions were not of such a quality as should reasonably be expected, and with but few exceptions the same remarks would apply to the horses and swine.

"The buildings, fences, and machinery, in bad repair, the latter consisting in most part of old second-hand implements, wholly inadequate for the purposes of farming, nearly all of which were wholly without shelter—all had the general appearance of poverty —more theory than practice. No doubt this condition was due to a lack of funds.

"In March, 1884, at the request of Prof. Thompson and the Board of Regents, your committee met that Board at Lincoln and learned that a majority of the regents had never seen the College Farm, and knew but little concerning it except the information furnished them by the professors in the University."

From this report it appears that altho the Board of Regents had taken some steps looking to the improvement of the farm and raising the standard of the livestock, they were in debt $5,000 on $6,000 worth of livestock and in debt $1,000 on miscellaneous expenses. The report of the committee goes on to say:

"After mature consideration we are of the decided opinion that the Nebraska Agricultural College comes far short of the intention of the framers of the act of Congress creating it.

"The course of study in the Agricultural Department is not calculated to attract any great number of students, and is of little or no benefit except the small financial benefit afforded to a few of the students and professors. The present course of six or seven years does not meet the demands of our state.

"In our opinion a much shorter course is needed, and that practical agriculture, mechanics and useful trades should constitute a large portion of the course. And it is our opinion that this end cannot be accomplished while the College Farm and its funds are under the control of the Board of Regents, to be applied by them in accordance with the narrow and unjust construction placed by them upon the act of congress donating lands and funds for agricultural, mechanical, and industrial purposes.

"We would therefore recommend a separation of the Agricultural College from the University, and recommend the passage of the bill now before the legislature—House Roll No. 216—for that purpose."

As before stated, these attempts to divorce the college from the University failed, but they serve to show the feeling of the time. Doctor Bessey was setting about to reorganize things. His report for the year ending 1886 says:

"When I first became acquainted with the College Farm, and began to have a certain responsibility as to its condition and management, I was much pained and chagrined. It was a standing reproach to the Industrial College. A report was made by a committee of the State Agricultural Society in January, 1885, condemning its appearance and condition in the strongest terms. This has all been changed. The farm has been largely freed of weeds, its hedges have been neatly trimmed, buildings and fences have been repaired, the larger building has been repainted, walks have been laid and the cattle yards rebuilt."

There was much to be done in reorganizing the courses in the Industrial College. When Doctor Bessey took up his work with the University there were two main courses in the Industrial College, an agricultural course and a civil engineering course. The degrees of Bachelor of Agriculture and Bachelor of Civil Engineering were awarded at

the completion of the respective courses. In 1886 Doctor Bessey pointed out that there were fifteen students enrolled in the various classes of the Industrial College, of which eleven were taking engineering and four agriculture. "Looking back over the records of the last few years, the attendance in college classes (Industrial College) in the year 1882-3 is given at fourteen, from which time it declined to the year 1884-5, when it reached its lowest point, and since which it has been steadily improving," Dean Bessey stated. "This improvement has been most rapid in the Engineering course, but the indications now are for a healthy growth in the Agricultural course. In the latter course three of the students come from colleges in other states, viz., one from Chicago University, another from the Agricultural Department of the University of Illinois, and the third from the Iowa Agricultural College." Doctor Bessey declared that "I know of no case in which there is provided as much agriculture, horticulture, and veterinary instruction as we now offer in the agricultural course of this college."

In an article published in *Agriculture* in October, 1910, Dean Bessey told with characteristic frankness the effect of his reorganization upon the agricultural students, as well as some interesting sidelights regarding the farm:

"Accordingly I became Professor of Botany and Horticulture in the fall term of 1884, and this was my title for nearly eight years. What these eight years accomplished can not be told briefly. In the first place, at that time all teaching was done on the campus in the city, no beginning having yet been made for school work on the Farm. Then too the Farm was a very long way out into the country at that time, as the whole distance from the Antelope valley to the Farm was filled with cornfields, wheatfields, orchards and even wild and unbroken prairie land. In muddy weather one had great difficulty in traversing the soft dirt roads, and it was a bad hour's drive from the city to the old stone farm house, and the rather shabby barn and sheds. Yet at this time there were a few students at the Farm, attracted by the fact that they were able to obtain rooms here in the old 'Dormitory' at a merely nominal rental. For it seemed to be the old idea that boys would have to be enticed into agricultural

study, and so room rent was very low, and the cost of board was merely nominal also. And what a 'job lot' of ten or a dozen students were there. Not one was able to pass the somewhat stiffened requirements that were soon inaugurated and every one of them disappeared. They were the fellows who could not get along in any other course than the agricultural and horticultural, and even in this work they failed when the work was made a little harder. As a result the University for a time had not a student in agriculture and horticulture, but when they began to appear again they were boys of different stuff. Instead of being the weaklings and the sluffers they were now a lot of strong energetic workers, who 'got there' in their work every time and all the time. That was one thing accomplished."

But thruout this period there was a constant effort to emphasize the scientific character of the work in agriculture. In 1884 Doctor Bessey had already outlined his views on the general subject of industrial education:

"In order that the work of the Industrial College may be definitely laid out, the purpose of the school must, in the first place, be clearly and exactly defined. Ever since the passage of the law of Congress which gave existence to the Industrial Colleges of the states, there have been different interpretations of its purpose. On the one hand it has been held that the colleges founded under this law should instruct mainly in practices, and that on this account they should become manual labor schools in which every operation in the shop or on the farm and garden should be practiced by the pupil until he becomes a skilled workman. This was the earlier view, and many of the state colleges were started upon this plan.

. . . .

"The intent of the congressional law, as indicated by its wording, and as now understood by the majority of the educators of the country, was doubtless to provide for colleges in which should be fostered the great sciences which underlie agriculture and mechanics, as literature and the classics are fostered in the ordinary colleges. According to this view, it should be the purpose of this college, first, to teach thoroughly those branches of learning which are related to agriculture and the mechanic arts, and in this manner to lay a firm foundation for the subsequent study of the application of these branches to the practical work of the farmer and gardener."

The catalogs of the later eighties tell something of the agricultural course then prevailing:

"As scientific agriculture rests upon and is an outgrowth from the natural sciences, the student in this course devotes much of his time in the earlier part of his college life to their mastery, and afterwards employs himself in a study of their applications. Thus chemistry, physics, zoology, botany and geology will occupy prominent places in the curriculum, each one contributing to that mass of knowledge and practice which constitutes modern scientific agriculture. With these the student takes up such language studies as will enable him to use his own language properly, and to consult with ease the works of the best foreign authorities. In addition, provision is made for the study of history and literature, in order that he may enrich and liberalize his mind by an acquaintance with the treasures of the past. To the foregoing are added in the Junior and Senior years the special studies of the course, viz.: Agricultural Chemistry, Horticulture, Entomology, Agriculture, and Veterinary Science, thus combining and directing into a special channel the knowledge given by the previous lines of work."

But the important feature of this reorganization of the Industrial College was the action of the Board of Regents on April 10, 1889, of transferring to the Industrial College scientific courses heretofore offered in the academic college. This action as stated in the report follows:

"Whereas, the Act of Congress, approved July 2, 1862, makes it the leading object of the Industrial College 'to teach those branches of learning which are related to agriculture and the mechanic arts,' and

"Whereas, the natural and physical sciences are all in some degree related to agriculture and the mechanic arts, so that the Industrial College is obliged by the terms of its organic law to maintain a course of scientific instruction as its 'leading object,' and,

"Whereas, the logical relations of a scientific course to the technical courses of the Industrial College (these technical courses being branches or special developments of the scientific course), also demand that the Industrial College should maintain a scientific course, and,

"Whereas, it is not expedient or economical to duplicate in any college of the University a course maintained in another college of the same University, therefore,

"Resolved, that the scientific course of study shall hereafter be a part of the Industrial College, and that the students pursuing such course shall be catalogued as students of the Industrial College."

The Industrial College now granted three degrees, Bachelor of Science, Bachelor of Agriculture, and Bachelor of Civil Engineering. A two-year course in agriculture was being offered, but the courses leading to degrees required four years. The two-year agricultural course was hardly more than of high school grade, requiring for admission a knowledge of English grammar, arithmetic, geography, and history of the United States.

The advantage in moving the scientific course over into the Industrial College was naturally the increase in number of students and the greater solidarity in the work. The catalog of 1886-87 showed fourteen students in the Industrial College. Nine were taking engineering, two agriculture, and three were classed as special, altho two of the latter were probably agricultural students since they made their residence at the college farm. The catalog for 1887-88 showed fourteen students in the college, eleven taking engineering, one agriculture, and two being classed as specials. But the catalog for 1888-89 showed the result of adding the scientific students to the roster of the Industrial College. There were now fifty-seven students in the college. Thirty-five were listed as taking the scientific course, eight the engineering course, two the agricultural course, and twelve were classified as specials.

NEW BUILDINGS AND FINANCE

The University had now outgrown its original building. For years there had been a constant agitation for new buildings to house the growing University. The first new building on the main campus of the University was the chemistry building for which the Legislature of 1885 appropriated $25,000 and which was erected in 1885 and 1886. This building now houses the College of Pharmacy. Then came Grant Memorial Hall, for which $20,000 was appropriated by the Legislature of 1887, and which was erected in 1887-88. It served, and still serves today, as a gymnasium, auditorium, and military drill hall. Then

finally, in 1888-89, came Nebraska Hall, the Industrial College's own building, for which the same Legislature had appropriated $50,000. This building housed the museum and the departments of botany, zoology, agriculture, horticulture and physics. These three buildings are still in use, altho the agricultural departments have long since been moved to the college farm. Up to the time under discussion in this chapter, there had been no buildings of consequence erected on the college farm, only small improvements being made from time to time.

The University was supported by a three-eighths mill tax, by the income from the University and Agricultural College lands, and by the fees paid by students. The latter, however, were insignificant. Now and then the Legislature would appropriate something from the general fund of the state, but appropriations of that kind were not to be had very often. For the two-year period ending November 30, 1888, the University received $110,179 from state taxes, $2,670 from interest on bonds, $6,392 from interest on University lands sold, $12,260 from rental of University lands, $14,231 from interest on Industrial lands sold, and $23,419 from rental of Industrial College lands leased. This made a total of about $169,000. Besides a paltry sum from tuition fees, the University that biennium had received an appropriation of $15,000 from the general fund of the state toward the erection of Grant Memorial Hall.

It was a matter of much discussion at this time as to the rights of the University to its own funds. The regents maintained that the statutes of the state placed in their hands the temporary University funds as they came into the treasury. But the Legislature and the Supreme Court thought otherwise. The regents' report of 1886 tells something of this:

"Since the adoption of the present Constitution, the Legislature has assumed that these funds were a part of the funds in the state treasury that cannot be drawn out except as specifically appropriated

by itself. Since 1875, therefore, it has been customary for the Legislature at each session, after a necessarily superficial examination of the facts and circumstances, to appropriate so much of the balance on hand and the probable income of these funds for the support of the University, as it deemed expedient, and permit the surplus to accumulate in the treasury."

The Legislature had appropriated the $25,000 for the Chemistry building from the University fund. For the Grant Memorial Hall it appropriated $5,000 from the temporary University fund and $15,000 from the general fund of the state. The $50,000 for the Industrial College building had been appropriated from the temporary University fund. There was constant difficulty in securing appropriations for the College Farm, however. In 1886, the regents bemoaned the fact that the Legislature had made no appropriation for the improvement or current expenses of the college farm, and what improvements were made had to be paid for from the sum appropriated for salaries and current expenses of the University.

How the funds accruing from the Industrial or Agricultural College lands were handled is explained by Mr. Dales in the regents' report for 1888. That year the regents had requested a statement of the items chargeable against those funds. Expenses belonging exclusively to the Industrial College were charged to it, and less than half of the general expense belonging to both colleges. Professors who devoted practically their entire time to the Industrial College had their salaries charged against its funds; in the case of some who served part time in that college, one-half or one-fourth of their salaries were charged to that college. Under this plan, the cost of the Industrial College exceeded by $5,308 the amount of money available for it under its Land Grant. However, it must be remembered that under this method of figuring the Industrial College was not sharing directly in the income from the three-eighths mill tax.

FARMERS' INSTITUTES

Farmers' institutes during this period again attained a measure of popularity. There is a record of the formation of the Nemaha County Farmers' Institute Association on February 7, 1882. Dean E. A. Burnett in a sketch of the development of farmers' institutes, published in 1906 in the University's first report on Nebraska farmers' institutes, says of this organization:

"A few enterprising farmers discussed the benefits to be derived, and Mr. W. F. Wright met Professor S. R. Thompson at Lincoln to talk over the movement, which resulted in the appointment of this meeting, attended by S. R. Thompson, Professor of Agriculture, and H. C. Culbertson, Professor of Horticulture. The Hon. R. W. Furnas, Secretary of the State Board of Agriculture, was present at this meeting, together with a large number of men and women who have since been prominent in Nemaha and Johnson County Institutes. This meeting was held twenty miles from the nearest railroad station. The organization formed in 1882 is still active."

Another organization of the same kind was formed at Tecumseh, Johnson County, in October, 1882. Both of these organizations were active for many years, the latter becoming the Johnson County Farmers' Institute later. It is interesting to record that in 1905 it held a four-day institute, with a corn show and a good roads day. The tendency more and more was for the farmers themselves to take a definite part in promoting the institute movement and to form organizations to sponsor it each year. There is this record of a meeting of the Lancaster (County) Agricultural Society, held December 27, 1884:

"Prof. C. E. Bessey was present and addressed the society in relation to holding a county Farmers' Institute. Professor Bessey said that heretofore these institutes had been held under the auspices of the Agricultural College, but he thought that it would be better for the county agricultural society to hold them, or assume control of them. The professors would attend and give lectures and do whatever they could to make such institutes a success. At the close of Professor Bessey's talk Mr. Brinton moved that a committee of three be appointed to consult with Professor Bessey to fix the time of holding the first institute."

Prof. H. H. Wing, reading a paper before the Nebraska Dairymen's Association in 1887, declared that "at least four such institutes were held in 1887, entirely by the efforts of farmers in their several localities." In 1889 a three-day institute was held at Broken Bow.

In Dean Burnett's article, Doctor Bessey is credited with stating:

> "Somewhat later, perhaps in 1888, when I was acting Chancellor of the University, I took the matter up with Governor Furnas, and we planned a series of Farmers' Institutes to be held in different portions of the State. He volunteered to attend as many as he could; Mr. Bassett did the same. Mr. Stephens of Crete, Mr. Youngers of Geneva, Mr. Dinsmore and others volunteered, and we held a good many Institutes beginning with the winter of 1888-89. The plan was that the locality should pay the expense of those who attended. As far as possible, we all secured transportation and simply asked the people of the locality to see that we did not have to pay hotel bills. Where the people failed to cover our expenses we bore them ourselves. This work went on with increasing success for a number of years, up to the time when Professor F. W. Taylor was appointed to look after the matter."

There appear to be rather three periods of development in the history of the farmers' institute movement in Nebraska. The first institutes seem to have been held at the suggestion of the University or Agricultural College. Later, farmers' clubs and societies began to have a part in holding an institute in their communities each year, in many cases societies being organized primarily for the purpose of conducting the institute. Then, about 1896, came a period when the college assumed definite leadership in the movement, with a superintendent of farmers' institutes. The State Legislature began making appropriations for carrying on the work and the foundation was laid for the tremendous growth of the institute movement in the early 1900's.

REFERENCES

Annual Reports and *Bulletins* of the Industrial College and (later) the Agricultural Experiment Station of Nebraska. 1880-90.

Annual Reports of the Nebraska State Board of Agriculture. 1884, 1885.

BESSEY, CHARLES E. "Some Early Horticultural History." In *Agriculture,* October, 1910. School of Agriculture, Lincoln.

CALDWELL, HOWARD W. *Education in Nebraska.* Circular of Information No. 3, 1902, of the United States Bureau of Education.

Catalogs of the University of Nebraska. 1875-1890.

Laws of the State of Nebraska. 1877.

Nebraska Farmers' Institutes, First Report. University Bulletins, Series XI, No. 22. University of Nebraska. 1906.

Reports of the Board of Regents, University of Nebraska. 1876-90.

Reports of the Chancellor to the Board of Regents, University of Nebraska. 1885-1890.

TRUE, A. C. and CLARK, V. A. *Agricultural Experiment Stations in the United States.* United States Department of Agriculture, 1900.

The University of Nebraska, 1869-1919. Semi-Centennial Anniversary Book. The University, 1919.

V

AGRICULTURE COMES INTO ITS OWN

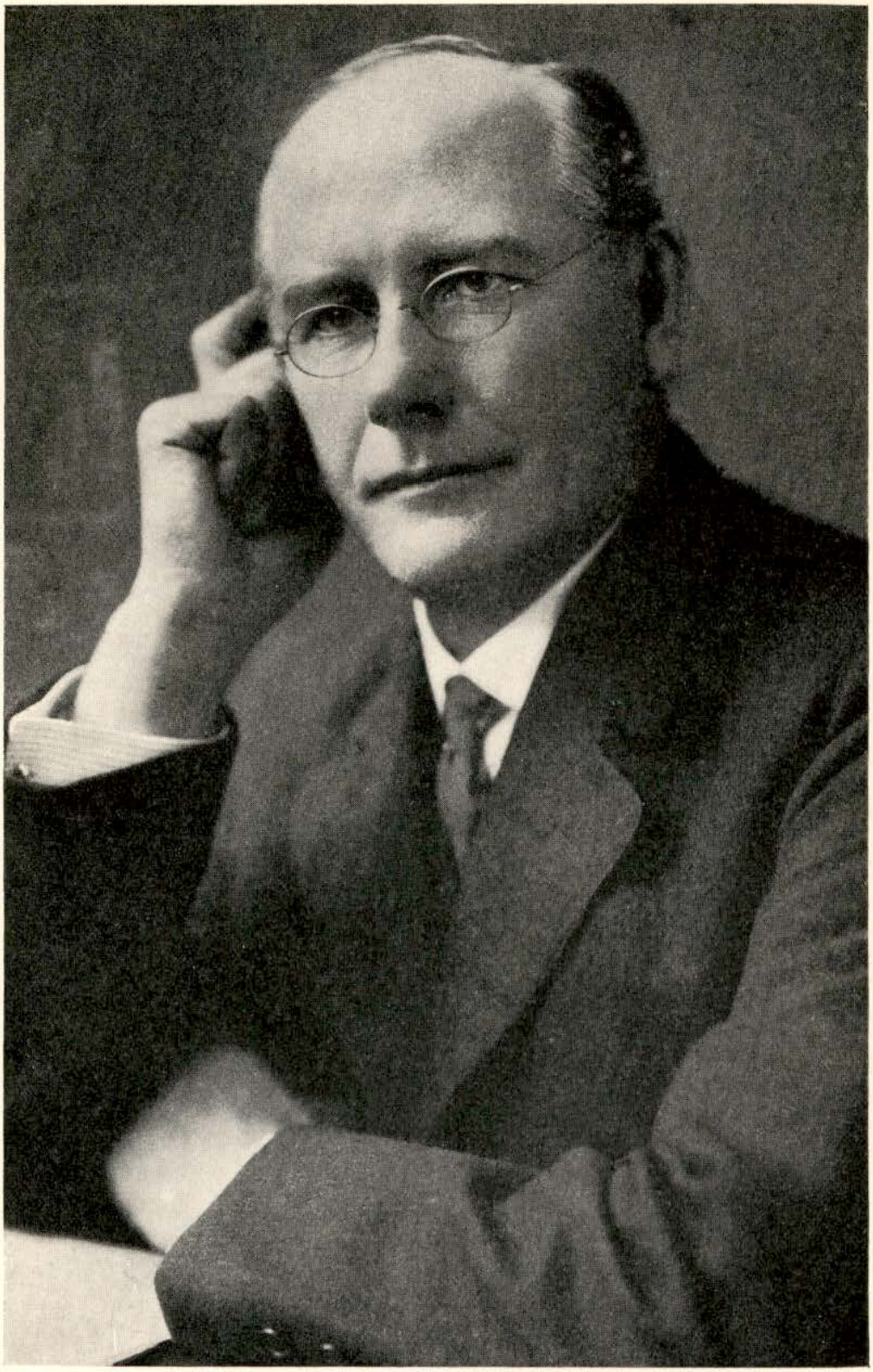
IT MAY be said that it took eighteen years to lay the foundation of agricultural instruction and research in Nebraska, and another eighteen years to build on this foundation. The eighteen years beginning about 1890 marked a period of great development for the Industrial College as well as the University itself. A School of Agriculture was early established and in a comparatively few years began to number its students in the hundreds. What the agricultural department of the Industrial College had heretofore lacked in numbers, this secondary school supplied. For the first time, the college farm began to be regarded as an educational center of its own. Then came its rapid development with the erection of several of the magnificent buildings of today. By 1909 agriculture had reached such importance in the Industrial College that a separate Agricultural College was once more established, with the farm campus for its headquarters.

The University itself prospered greatly in these years, and this prosperity was reflected in the increasing development of the Agricultural College. The total enrollment in the University passed the 2,000 mark in the academic year 1899-1900 and the 3,000 mark in the year 1906-1907, these figures including students in all the schools and colleges. In 1899 it was stated that the University had students from as far west as California and as far east as Japan. More money for the support of the University and its Industrial College became available. The tax for the support of the University, which had been cut to a quarter of a mill and raised to three-eighths of a mill, during the early days of the University, was again restored to the full mill in 1899. Agricultural instruction and experimentation were benefited by the "Second Morrill Act" of 1890, the Nelson

Amendment of 1907, and the Adams Act of 1906, all bringing more money to the agricultural side of the institution. Agricultural extension began to develop with scores of farmers' institutes and short courses being held in every section of the state. Here we also find the beginning of home economics instruction for women, culminating in the latter part of this period in the erection of the home economics building on the farm campus. All in all, this was a period of development such as would hardly have been conceived to be possible in the eighties.

James H. Canfield had been called from the Kansas State University to the chancellorship of the University of Nebraska in 1891. It was undoubtedly due to his leadership that the University received such a vigorous start during the early part of this period. With experience as a railway superintendent and legal as well as academic training, he was quite at ease in coping with the problems of the University. In four years the enrollment of the University nearly tripled. Even during panic times, he gave the optimistic advice, "If you cannot earn, you at least can learn." In short, he was the University's ambassador to the people of Nebraska.

When Chancellor Canfield resigned in 1895 to become president of Ohio State University, and later librarian of Columbia University, he was succeeded by George E. MacLean, who had been serving as professor of English language and literature in the University of Minnesota. For four years Doctor MacLean was to guide the destinies of the institution. Chancellor MacLean displayed an especial interest in the work of the School of Agriculture, which was started during his administration. Chancellor MacLean resigned in August, 1899, and Chancellor E. Benjamin Andrews assumed the duties of the office in August, 1900, Dean Bessey acting as chancellor during the intervening year. During the eight years that he was associated with the institution, Chancellor Andrews saw the enrollment grow from 2,256 to 3,611. In 1900 there



SAMUEL AVERY, CHANCELLOR

He was associated with the early work in agricultural chemistry and has served as chancellor for over sixteen years

were fifty-six persons with professorial rank connected with the University; eight years later there were 390. During his administration there was a great development of the college farm. Samuel Avery, who for a number of years had been associated with the department of chemistry, as well as the experiment station, was acting chancellor of the University in 1908-09, and became chancellor on May 20, 1909. During his administration the College of Agriculture and the college farm have attained their present proportions, but that will be left for our succeeding chapter.

THE SCHOOL OF AGRICULTURE

Most people, even today, do not understand that there are both a School of Agriculture and a College of Agriculture. The School of Agriculture is a high school, which emphasizes agricultural and home economics instruction in connection with a secondary school course. The College of Agriculture is a separate college within the University. It presupposes that those entering upon its course of study shall have had a high school education.

The School of Agriculture was undoubtedly the most important development from 1890 to 1908. Our readers no doubt recall the difficulty in securing any large number of students for the college courses in agriculture. Possibly one reason for this difficulty lay in the fact that those to whom a college course in agriculture would make a practical appeal generally did not have a high school education to begin with.

The report of the Board of Regents, for the two years ending in 1896, tells something of the reasons for the establishment of the school:

"The history of the University from the beginning shows similar attempts to satisfy the demands of the people of the state for practical Schools of Agriculture and the Mechanic Arts. Various so-called 'short courses in agriculture' were given. The regents believe that at last they have found why the earlier attempts did not

succeed, and that they have a plan that will succeed. The old schemes failed because either they had too high a standard, or practically no educational standard whatever. The College of Agriculture required extensive preparation and four years of continuous study. Its graduates were few, and were weaned from the farm. The high schools of the state prepared for every college but the technical college: hence rarely did anyone enter the latter. The short courses were on the other hand of such low educational standard that youths were not tempted to resort to them. They were excellent as somewhat extended Farmers' Institutes and fulfilled their mission for adult farmers. A missing link in the state system of education is the technological high school, or high school of applied science. The apparatus and instruction necessary in such a school make it too expensive at the present time for the high schools of the state to add the technological courses in agriculture and the mechanic arts. The regents propose to supply this missing link until the state attains to its full development, when it would be possible that these technical schools would be supplanted by the development of the high schools of the state with reference to this work, just as the high schools of the state have at length made the Preparatory Department or the state high school at the University unnecessary. The regents have raised the standard of the short courses in agriculture to that of genuine secondary schools."

As our readers recall, there had been heretofore abbreviated agricultural courses which required for completion one or two years of school. In the early nineties there was also a course for farmers given for a short time each winter. The rapid development of the beet sugar industry in Nebraska resulted in the establishment of a Sugar School, in the nineties. This will be discussed later. One also runs across mention of a dairy school in the early nineties, but its exact status is not apparent, the regents' report quoted above stating "in the School of Agriculture will be borne the Dairy School as a line of specialization of great value to the state of Nebraska." Later on a special dairy course appears to have been given in the winter months.

The establishment of the new type of agricultural school, which was a unit by itself rather than entirely a side line, marked a milestone in the progress of the Uni-

versity. How rapidly it was to grow is to be deduced from the fact that in 1908, E. A. Burnett, associate dean of the Industrial College in charge of agriculture, was to remark that "about 20 per cent of all the students in the University are now registered in the School of Agriculture." The success of this school was to make possible the rapid development of the agricultural campus, with the erection of many of the splendid buildings of today.

"In March, 1894, the regents announced that they proposed to open in September, 1895, a School of Agriculture and Mechanic Arts," reads their report for the two years ending with 1896. The first School of Agriculture did not open, however, until December, 1895. Fifteen students appeared for the course of instruction. It is interesting to note, perhaps, that it was fifteen students that entered upon the agricultural course of study in the University twenty-one years before. The School of Agriculture the first year held its sessions on the University campus downtown, because, as our readers know, the college farm as yet had small facilities for regular classroom work.

The members of the faculty were drawn from the Industrial College and the Experiment Station. Those who were said to have actually given instruction the first year included Prof. T. L. Lyon, Professor Bessey, Professor Bruner, Doctor Peters, Professor Swezey (meteorology) and Professor Card. On April 16, 1896, the regents appointed Professor Lyon director of the school and made plans for its further development. On the same day the regents organized the School of Mechanic Arts. We are not concerned to such a great extent with the latter, except possibly to note that the following fall it opened with an enrollment of sixteen. Altho it existed for a number of years, the School of Mechanic Arts never attained the popularity of the School of Agriculture. It aimed to do for the mechanically inclined young man what the School of Agriculture did for the farmer boy. In the School of Agriculture emphasis for the most part was placed on practical agricultural subjects.

In 1896 a small dairy building was erected on the farm campus, the first building for purely instructional purposes. Today, veneered with brick, this represents about one-half of the building occupied by the departments of rural economics and poultry husbandry. A dairy laboratory was on the lower floor of the building and a lecture room on the second floor. The little old stone house now housed a chemical laboratory and a lecture room. Two rooms of the house were occupied by Professor Lyon's office furniture and library. The school was now ready to begin operations on the farm campus. There were two new instructors the second year, A. E. Davisson, who was later to become principal of the school, and A. L. Haecker, who was later to become professor of dairy husbandry. Mr. Davisson gave instruction in English, history, and mathematics, while Mr. Haecker was assistant in dairying. Thirty-three students attended the school the second year.

The following summer an addition to the dairy building was erected and the entire structure veneered with brick. The faculty began to feel that agricultural education and the old college farm were coming into their own. Professor Davisson in his historical sketch of the School of Agriculture, published in *Agriculture* in January, 1909, tells something of the optimism prevailing at the beginning of the third year:

> "The writer very well recalls with what feelings of exultation the faculty prepared to open school in December. It was felt by Professor Lyon, Director of the School, that great things in agricultural education were about to happen. Some of the members of the faculty thought there would be more than one hundred students; others were more conservative, while the opinion was freely expressed by some of the professors on the campus—who were then opposed to agricultural education but who are now wholly in sympathy with the idea—that no greater number of students could ever be expected. As in the previous year, the school opened in December and fifty-one students registered."

Only three women registered in the School of Agriculture during the first three years. This was owing to the

fact that there was "no provision for giving instruction in the various branches of domestic economy." However, this situation was to be shortly relieved by the establishment of a School of Domestic Science and several years later the School of Domestic Science, as far as the secondary school courses were concerned, was to be absorbed by the School of Agriculture, thus offering attractive courses of study to both men and women. But, because the work in home economics was related to both school and college, a brief sketch of its development is reserved for a later section. The average age of the students attending the School of Agriculture was twenty-one, indicating that most of the students had decided to secure further education several years after having been graduated from the district schools.

At the close of school in March, 1898, Chancellor MacLean entertained the students at his home. He proposed that an association of agricultural students be formed for the purpose of continuing the work begun in the school. Chancellor MacLean and Dean Bessey were invited by the students to come to the farm and organize such an association. E. Von Forell of the Board of Regents had taken a special interest in the school and hearing of the organization of the students became convinced of the desirability of extending the course of study. The regents that April established a three years' course of study in the School of Agriculture, and also provided that students completing the course should be admitted to the technical agricultural group of the University.

The organization of this Agricultural Students' Association in connection with the School of Agriculture was an interesting development. It aimed to tie up the boys with the school in more or less permanent fashion after they had left the institution and gone back to their homes. The object of the association, as stated in the constitution, was "the continuance of the habits of study and investigation formed while at the School and College of Agriculture; and

general co-operation with the Experiment Station and the publication of results." All persons who at any time had been connected with the School or College of Agriculture or the experiment station were eligible to regular membership, while anyone recommended by one of the regular members might become an associate member. Early officers of the association were President, C. Y. Thompson, West Point; vice president, Albert J. Wilson, Webster; secretary, J. H. Windhusen, Hooper; treasurer, Gerrard Montgomery, Firth; student member of the executive council, John B. Miller, Lincoln.

Reports of the work of this association are to be found among the experiment station bulletins. The idea behind this association was that its members could perform useful experiments on their own farms, as well as continue their study. Members of the faculty outlined various experiments and books, making up a course of study, which could be undertaken in the student's spare time.

Under the reorganization of the work of the School of Agriculture on a three-year basis, opening at the same time as the University in the fall, it was thought that the purely agricultural courses could be given only during the winter term at the middle of the year. Under this arrangement, those who came to the school for only the one term attended the same agricultural classes with those who were taking the full course, and consequently they were at a disadvantage. There was also criticism of the University on the ground that it was running a preparatory school and calling it a School of Agriculture. In 1901 the course of study was reorganized. There were still three years to the regular course, but school began in November and was out in April. There were two terms each year and agricultural subjects were given both terms. Such subjects as English, mathematics, botany, civics, and physics received attention along with the purely utilitarian subjects such as soils, crop production, breeding and feeding live stock, veterinary practice, orcharding, gardening, etc. There was doubt in

the minds of some as to whether there was enough English, history, and mathematics in the course, but it was stated that there was no way to remedy this, except by adding another year for graduation. The catalog issued in 1902 stated that students anticipating entering the technical agricultural group of the Industrial College would have to take an extra year of preparatory work, besides the three-year course. Later they seem to have been admitted upon completion of the school's three-year course. Several years afterward the three-year course of the school was to be extended and made a four-year course.

The short course for those who could attend the School of Agriculture for only a short time during the middle of the winter was not abandoned. The winter course was entirely of a practical nature, usually operating for not more than two months. A special dairy course is to be found described in some of the early catalogs of the school, and later short courses dealing with other special subjects were to be offered.

The School of Agriculture continued to grow. With its growth there was a corresponding growth of the college campus. The demand for larger quarters for both the Experiment Station and the School of Agriculture led to the erection of Experiment Station hall in 1899-1900. Agricultural Hall, a building which has been the headquarters of the School of Agriculture ever since, was erected in 1904-05.

Attendance was increasing rapidly. It passed the 100 mark in 1899-1900 when there were sixty-five students enrolled in the winter course and forty-nine enrolled in the three years' course. In 1902-03 there were 206 enrolled, in 1904-05 there were 332, in 1906-07 there were 429, while in the year 1908-09, not counting some summer session students, who were included in the enrollment for a few years about this time, the 600 mark was nearly reached. The first graduate of the school was David F. Stouffer of Schuyler, in fact, the only graduate in 1901. In 1903 there were ten graduates. In 1908 there were fifty graduates.

In 1907-08 the School of Agriculture had become a co-educational institution and women were invited to take a course in home economics, corresponding to the boys' work in agriculture. It was at this time that the home economics building was erected. For several years a School of Domestic Science had been maintained and both secondary and college instruction had been given in home economics. Summer school instruction for the benefit of teachers had also helped to swell the total attendance of the School of Agriculture.

A sketch of the School of Agriculture would not be complete without some mention of Prof. A. E. Davisson, who was connected with the school for about fifteen years, until his death in 1911. He was made headmaster of the school in 1897, its director in 1899, and in 1901 he became known as principal of the school. One of his early duties was to visit county institutes in an endeavor to interest teachers and superintendents in the work of the school. Forty-four counties were visited in 1899, and the same number in 1900. "The School of Agriculture, a wonderful power for good through all Nebraska, is, in a way, his monument."

DEVELOPMENT OF HOME ECONOMICS

In a catalog or an announcement published by the University in 1894, a "Course 13" is listed under chemistry —domestic chemistry, consisting of two lectures with four hours of laboratory practice each week. If one turns to the University catalog published in June, 1896, one will find under the general head of chemistry, "Course 13." It consisted of "technical chemistry as applied to household economy. Qualitative and quantitative study of food material in general, with analyses of typical foods, and methods of detecting food adulterations." "Course 14," the second semester, consisted of "the chemistry of cleaning, methods of softening water, analyses of soaps, washing powders, and polishing powder, etc. Disinfectants and antiseptics." The course was in charge of Miss Rosa

Bouton, herself a graduate of the University of Nebraska. There were four prerequisite courses to this line of work, including both qualitative and quantitative analysis.

In the original proposal for establishing "A School of Agriculture and Mechanic Arts," published in the regents' report of 1894, there was a provision that the courses should be open to women as well as men. The women were to take up domestic science while the men agricultural students were studying veterinary science, and while the men took up shop work, the women were to be studying industrial art. But as our readers recall, the School of Agriculture and the School of Mechanic Arts were separate, and only three women enrolled in the School of Agriculture the first three years, and there was "no provision for giving instruction in the various branches of domestic economy."

In September, 1898, a School of Domestic Science was organized. Ten students registered for this course. College students also began to enroll for the work in domestic science, and the school apparently was forced to cater to the needs of both secondary and college students. "As soon as the work was begun college students began to apply for permission to register for domestic science," Miss Bouton, the director of the school stated, in the regents' report for the two years ending with 1900. "The request was granted and college credit given for this work."

Further information is contained in Miss Bouton's report:

> "This year there is an enrollment of forty-one unrepeated names in the domestic science classes. The kitchen laboratory, when filled to its utmost limit, will accommodate only sixteen students. The great need of more room is therefore very evident to all who visit our crowded quarters.
>
> "The work is based on scientific principles, and is decidedly practical. Actual cooking is done. Careful attention is given to the economy of time, strength and materials. The rational division of income is considered and the many problems which have to do with the furnishing and care of the home are studied.

"In addition to the number of registered students referred to above, an extension class, which meets Saturday afternoons, has recently been organized."

A two-year course in domestic science was first outlined in the catalog published in 1898, under the name of the School of Domestic Science. The school year in this course ran practically parallel with the regular University year, and was not abbreviated in fall and spring as was the School of Agriculture course, until it was actually absorbed in the School of Agriculture. The studies taken up in the School of Domestic Science included mathematics, English, physics, chemistry, political economy, free hand drawing, biology, domestic science, and physical training and hygiene. "The aim is to make the entire work in this course educational; to train the mind, and develop character in the kitchen as well as in the laboratory," the catalog stated regarding the work in domestic science. It was estimated that the cost of a year's schooling would be about $117.50, table board being obtainable at $2 a week, and rooms at $3.50 a month. About 1900 Miss Annette Philbrick from the Columbia College School of Domestic Science was added to the faculty. Miss Rosa Bouton, adjunct professor of chemistry, remained as director of the School of Domestic Science.

The catalog containing the announcements for the academic year 1899-1900 listed domestic science as a regular college course, as well as the School of Domestic Science. There was a course in food economics, which consisted of "study of food principles, comparison of nutritive and money values of food materials, marketing, values of fuels, general cookery of cereals, vegetables, meats, soups, breads, desserts, etc." This was continued the second semester, with three hours credit each semester. There was another course in household economics, which included "location of house, plans for the construction of a house, application of chemical principles in cleaning and disinfection, study of light, heat, ventilation, water supply, plumbing, sewage,

etc., in their relation to the home. Keeping of household accounts. Advanced course in cookery, including the preparation of salads, croquettes, pastry, cakes, etc., the preservation of food materials by canning, preserving, pickling, etc. Invalid cookery; serving of meals; preparation of dietaries." This was also continued the second semester. There were still two more courses, "5" and "6," which had not been arranged. Miss Bouton continued to give courses in the chemistry department dealing with analyses of food materials, and the chemistry of food and household sanitation.

The School of Domestic Science was housed on the University campus uptown. It never attained the great enrollment of the School of Agriculture, and there was apparently more demand for the work from college girls than from those registered in the School of Domestic Science. At least part of the work was given in the Mechanic Arts building, which had been erected in 1897-98. Miss Bouton tells something of the conditions in her report printed in the regents' report in 1902:

"Our total enrollment this fall is one hundred and three with seventy-four unrepeated names in place of forty-one two years ago. . . . . The large increase in the number of our students this fall has, however, filled our laboratories almost to the limit. . . . The end of the hall in mechanic arts building, which has been partitioned off for an office and a dining room is all too small for our present needs. . . . We have this fall started a noon lunch for which there seems to be a great demand. . . . Your attention is called to the fact that of the fifty-three students enrolled in the first year class thirty-five are college girls not enrolled in the School of Domestic Science. I speak of this because of rumors heard of the possibility of removing the School of Domestic Science to the farm. If you should see fit to remove the school to the farm the department of domestic science should, it seems to me, remain at the university."

Apparently there was greater emphasis placed on the teaching of college women than school students. Miss Bouton's report, incorporated in the regents' report for the two years ending with 1904, stated:

"Considerable progress has been made in raising the standard of scholarship in our department. This has been possible, because of the increasing proportion of fully prepared college students who are registering for the courses in Domestic Science. Because persons who are not prepared to enter the University as college students may enter the School of Domestic Science, we have since the organization of the School had a considerable number of students who were not able to reach the standards of scholarship which we are striving to maintain in the department. The proportion of this class of students has been gradually growing less as our work is becoming better known among college women. The number of poorly prepared students entering the School of Domestic Science has happily decreased. Girls have found out that the School is not an easy stepping stone by which poorly prepared students may enter the University. One new line of work which has been introduced in this department during the last biennium is a training class for teachers."

The School of Domestic Science had not been a particularly flourishing institution. The attendance for eight years since its establishment in 1898-99 had been for the respective years 11, 11, 16, 21, 32, 23, 23 and 22. Domestic science became home economics in the University catalog published in 1906. The courses offered by this time included domestic art (sewing and designing), domestic science general cookery, domestic science advanced cookery, domestic art (taking up draughting, cutting and making of garments, as well as harmony of color and house decoration), household economics (including study of house plans and equipment, and management of household affairs), a general course in domestic science for those who could not spend much time at the subject, methods of teaching domestic science, and courses in elementary domestic art and elementary domestic science (given in the school), and a general course in domestic art. Most of these courses were continued the second semester.

The report of the Board of Regents for the two years ending with 1906 tells of the organization of a four-year course in home economics:

"A four-year course in home economics has been adopted and work therein begun. Preparation is the same as for entrance to the Uni-

versity, and the course leads to the degree of Bachelor of Science. Subjects relating to the home occupy the first two years instead of the mathematics and physics required in the general scientific course. . . . This course being for women what the agricultural, forestry and engineering courses are for men, includes instruction in those vocations which belong peculiarly to women. Domestic art is required the first and fourth years, domestic science the second and third years and home economics the fourth year. One year's work in physiology, hygiene and first aid to the injured is also required."

In 1907-08 the school course in domestic science was offered in connection with the School of Agriculture at the college farm. Some twenty-five girls were in attendance, altho the home economics building was not yet complete. The erection of the new building at the college farm made it possible to give all the home economics work there, college as well as school instruction.

There were some twenty-two college subjects in home economics listed in the catalog published in 1908. The course of study for women in the School of Agriculture embraced three years' work, the same as the agricultural course for men. From this course they could be admitted to the home economics group of the Industrial College without examination, the same as the men could be admitted to the agricultural group. Miss Bouton was still in charge of the work in home economics at the close of this period.

THE WORK OF THE COLLEGE

The School of Agriculture for many years quite overshadowed the agricultural courses of the Industrial College. In fact, in the 1900's there were often two-thirds as many students registered in the School of Agriculture as in all the collegiate courses of the Industrial College put together, scientific, engineering, and agriculture. No wonder the college farm began to be known as the home of the School of Agriculture. In fact, it is interesting to note that in 1895 there were just fifteen agricultural students in the University. In four or five years the number had grown to sixty-six.

Dean Bessey tells something of the development of the Industrial College in the report of the Board of Regents for the two years ending in 1898:

"Ten years ago the Industrial College was in the anomalous condition of being a college of applied science with no scientific course of study to serve as a center around which to group the technical courses. It had enrolled in college work but fourteen students, and in the preceding years the number had been still smaller. In the early part of the college year 1888-89, on recommendation of the faculty, the Regents quite radically changed the old scientific course hitherto found in the college of literature, science, and the arts and transferred it to the Industrial College. The changes made adapted it to its new environment, and fitted it to be the center of a group of industrial courses which at once began to grow up about it.

"Before this reorganization there were but two courses of study in the Industrial College, viz., the course in civil engineering and the course in agriculture. For some time there had been offered in addition a short agricultural course, which, however, never attracted any students. The only departments of instruction catalogued as belonging to this college were civil engineering, botany, horticulture, and agriculture. As a result of the reorganization there were at once offered a general scientific course, and several modifications of these, viz., in electricity, chemistry, agricultural chemistry, geology, zoology, and agricultural biology. Two years later these were crystallized into four of the present 'groups' in this college, viz., general scientific, agricultural, civil engineering, and electrical engineering. To these additions have been made from time to time so that now there are two general groups or courses, viz., general scientific and general agricultural; seven special groups, viz., agriculture and chemistry, botany and agriculture, botany and zoology, chemistry and physics, horticulture and botany, mathematics and physics, zoology and philosophy, and six technical groups, viz., technical agriculture, civil engineering, municipal engineering, electrical engineering, steam engineering, and mechanical engineering.

"In this period there have grown up in the congenial atmosphere of the college, the course Preparatory to Medicine, the Sugar School, the School of Mechanic Arts and the School of Agriculture and Dairying, all of which have attracted many students.

"The following numerical data regarding the students in college classes in the Industrial College will be of interest in this connection:

"In 1888-9, there were 57 students; in 1891-2, 117 students; in 1895-6, 228 students; in 1897-8, 327 students.

"Counting all students in the Industrial College, its preparatory classes, sugar school, school of agriculture, and school of mechanic arts, the numbers for the years mentioned are as follows:

"In 1888-9, there were 95 students; in 1891-2, 225 students; in 1895-6, 416 students; in 1897-8, 481 students."

The enrollment in the Industrial College, including its allied schools, in 1898-9 was 483, in 1899-00 585, in 1900-01 595, in 1901-02 551, in 1902-03 673, in 1903-04 754, in 1904-5 852, in 1905-6 940, in 1906-7 1,086, in 1907-8 1,197, and in 1908-9 1,882. The number of students taking strictly agricultural studies toward the end of the period is not readily apparent. We may gain some idea perhaps by taking the records in the catalog published May 1, 1910. This was just after the College of Agriculture had been made a separate college, instead of a part of the Industrial College, in 1909. In this catalog there were 165 students listed in the newly formed College of Agriculture, 116 men and 49 women, the latter being mainly those who were taking home economics. These figures did not include the enrollment in the School of Agriculture. In June, 1910, nine students in the College of Agriculture received the degree of Bachelor of Science. These figures represent perhaps in a fair way the registration in agricultural and home economics subjects at the close of this period.

There were comparatively few students in the entire history of the University who graduated with the degree of Bachelor of Agriculture. Just seven such degrees had been conferred, one in 1875, one in 1877, one in 1882, three in 1883, and one in 1891. The report of the Board of Regents for 1892, after discussing the different lines of work offered in the Industrial College, announced: "For all this work, the degree of B.Sc. is granted." Apparently, this marked the end of the degree of Bachelor of Agriculture at Nebraska.

Undoubtedly, then, one must look in the list of graduates with the degree of Bachelor of Science for those who really were agricultural students during this period. The catalog

published in 1904 announced, apparently for the first time, that the Industrial College "offers courses leading to the degree of Bachelor of Science, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering, Bachelor of Science in Mechanical Engineering, Bachelor of Science in Agriculture, and Bachelor of Science in Forestry. Perhaps, even under this arrangement, there were students who graduated with the plain degree of Bachelor of Science, who, judged by the line of work they took up, should have had the degree of Bachelor of Science in Agriculture. The lists of graduates in the catalogs class all of these graduates simply as Bachelors of Science, without any subdivision into groups.

It will be interesting no doubt to take a look at one of the catalogs published in the nineties to ascertain just what instruction along agricultural lines of collegiate grade was then offered. Take the catalog published in June, 1896, for instance. Associate Professor T. L. Lyon, of whom we have already heard, Dr. A. T. Peters, and H. C. Heald were listed as the instructors in "agriculture." There were nine courses in that subject, "agriculture" then representing a diversity of interests, which today are represented by separate departments. The courses included soils, field crops, stock feeding, breeds and breeding of stock, anatomy and physiology of farm animals, diseases of farm animals, dairying, sugar beet culture, and technology of sugar manufacture. "Entomology, ornithology, and taxidermy" was listed by itself in the catalog, with Professor Bruner and W. D. Hunter in charge. There were fourteen courses dealing with those subjects. Horticulture, with Associate Professor Fred W. Card in charge, had its own place in the catalog. These were eleven courses here, including pomology, vegetable gardening, landscape gardening, forestry, greenhouse work, horticultural literature, plant breeding, and original investigations, as well as continuations of certain of these courses.

EDGAR ALBERT BURNETT
Dean of the College and associated with its work for a quarter of a century

The general scientific departments of the University contributed to the agricultural course of the Industrial College. The agricultural course embraced for the first year entomology, chemistry, English, hygiene, mathematics, horticulture, and physics. The second year there were botany, chemistry, English, horticulture, modern language, and physics. The third and fourth years there were English literature, agriculture, geology, zoology, military science, required English themes, and drill. Electives filled in the gaps in the course. By this time the school year was made up of two instead of three semesters, both of about equal length.

The agricultural department of the Industrial College was notably advanced in 1901 when E. A. Burnett, who had come to the college in 1899 to take charge of the work in animal husbandry, was made associate dean in charge of agriculture. Dean Bessey was head of the Industrial College. By this time the college farm and its experimental work was well under way, with new departments being formed and developed.

In these years there was not a hard and fast line dividing the faculty of the School of Agriculture, the agricultural faculty of the Industrial College, and the staff of the experiment station. They were all connected with the "farm" and most of the faculty served in two or all three divisions of the work. This period, from about 1890 to 1908, was productive of most of the departments now on the farm campus.

A notable figure in the early nineties was Prof. C. L. Ingersoll. Professor Ingersoll had graduated from the Michigan Agricultural College and had held professorships at both Michigan and Purdue. For nine years he had been president of the Colorado Agricultural College, but in 1891 he was made professor of agriculture and dean of the Industrial College at Nebraska, succeeding John S. Kingsley as agriculturist. In 1892 he also became director of

the Experiment Station. Failing health, however, compelled him to sever his connection with the college, and he passed away at Grand Junction, Colorado, December 15, 1895. T. L. Lyon, who had been assistant chemist in the Experiment Station, was elected associate professor of agriculture to succeed Professor Ingersoll.

EVOLUTION OF DEPARTMENTS

Agronomy.—There had always been instruction in "agriculture" in the college. But "agriculture" as a subject in the earliest years embraced all the courses of the Agricultural College, generally speaking. Gradually it sloughed off one course after another, as a division of the subject became of sufficient importance to have a professor of its own. The catalog published in 1905 was the last one in which the general subject of "agriculture" appeared. By that time so many other departments had been established that "agriculture" now included mainly soils and crops, with a little farm management and grain grading. Prof. T. L. Lyon and E. G. Montgomery were then in charge of the work. In the next catalog "agriculture" had disappeared, but in its stead was "agronomy" with the same courses listed. This marked the final breaking up of the old general subject of "agriculture." Alvin Keyser was now connected with the department, in addition to Mr. Lyon and Mr. Montgomery.

Professor Lyon resigned in September, 1906, and the department of agronomy was divided. In the catalog of 1907 "agronomy" itself had disappeared, but in its stead were the departments of field crops, presided over by Professor Montgomery, and soils, presided over by Professor Keyser. This was reorganized again in 1909 and a department of agronomy and farm management created. There was also a division called experimental agronomy. The soils and field crops were again in the same department. The work in soils was now in charge of Prof. Percy B. Barker, the work in field crops in charge of Prof. Erwin

Hopt, the work in farm management in charge of Prof. C. W. Pugsley, and the work in experimental agronomy in charge of Prof. E. G. Montgomery. Professor Keyser had resigned to accept a position at the Colorado Agricultural College.

Horticulture.—Horticulture was one of the pioneer subjects in the college. Harvey Culbertson, the first graduate of the Agricultural College, served as professor of that subject at one time. When Doctor Bessey came to the University he was "professor of botany and horticulture." Dean Bessey's duties as professor of horticulture at first had consisted largely, with the assistance of John Green, the head janitor, in putting the grounds of the University uptown into presentable shape. Trees were set out and efforts were made to develop a small botanical garden.

"At last the time came (1892)," says Doctor Bessey, "when a separate professor of horticulture was elected, in the person of F. W. Taylor, who soon brought together several active and enthusiastic classes in horticulture." Professor Taylor resigned in 1893, but he was later to perform a valuable service as superintendent of farmers' institutes and in introducing the Kherson oat from Russia. Fred W. Card then became associate professor of horticulture. Mr. Card accomplished a great deal during the late nineties with the young but growing farm campus, just as Professor Bessey had done with the campus of the University downtown.

To the department of horticulture fell the responsibility of developing the farm campus. R. A. Emerson, who was appointed assistant horticulturist on September 15, 1895, tells something of this development in *Agriculture* for October, 1910:

"The first time I ever saw the University Farm campus (it was not a campus then) was one Saturday in the fall of 1892, when, together with a number of other University students, I cut and shocked corn there for Mr. Perin. The corn was growing in the west side of the orchard, northeast of the hog shed and yards, which

means that it was between the present horticultural building [this was succeeded by the Plant Industry building] and Home Economics Hall. . . .

"West of Mr. Perin's house, extending from Holdrege street north along the west side of the orchard, was a grove of cottonwood, ash, and honey locust. Many of these trees are still standing. About the only bit of grass that was kept well trimmed, aside from that about the foreman's house, was the 'lawn' under the cottonwoods at the south end of the grove. Hand lawn mowers were not used here, and horse lawn mowers were unheard of, but the Jersey bull did excellent work within the limits of his lariat. . . .

"To be sure, there was then as now—tho this may have come later—a horticultural building. But the building that now houses horticulture [even this has now been superseded] . . . is palatial in comparison with the building used in the early 90's. It stood north of the old implement room and contained a tool room where the hoe was kept, a harness room, general laboratory, and workshop, as well as office room for the foreman, hired man, orchardist, gardener, campus superintendent, Experiment Station assistant, teamster, etc. (All of these positions were filled by one man when I began working for the Department of Horticulture about 1895.) . . .

"The first improvements of a horticultural sort begun on the farm campus after the time I first saw it were made by Professor Card during the late 90's, when a considerable number of trees were set near the horse barn and the dairy building [now poultry and rural economics building]. Professor Card also established an orchard of some ten or fifteen acres where the veterinary building and cattle barns now stand. Soon after he left the University and when the new animal husbandry department began growing, this young orchard was grubbed out to make room for barns and yards, and another orchard of some twenty acres was established near the east end of the farm.

"The ten-year period from the late 90's, when Professor Card left, to the time Mr. Dunman came to take charge of the campus a couple of years ago, was one of rapid development. Practically all the buildings we now have were erected during this time. . . . One never knew, after a group of trees or shrubs was planted, how long before a driveway, walk or sewer ditch would be sent straight thru it or a building erected upon that very spot. . . .

"It was toward the end of this period that the arboretum was established as a part of the campus. This move was characterized by a prominent Nebraska horticulturist as the most important step

ever taken by the University in a horticultural direction. A large number of varieties of trees and shrubs of certain families were planted and these now constitute what there is of the arboretum.

"To my notion, the most important thing that has ever happened for the good of the farm campus was the decision of the Board of Regents to adopt a permanent plan to be followed in the placing of future buildings. While this plan was adopted some years ago, it really belongs to the present period of campus improvement. It was the beginning of new things on the campus."

Professor Card left the University in 1898 to become professor of horticulture in the Rhode Island Agricultural College. Others who served for more or less time during these years, up to about 1910, included Val Keyser and F. E. Denny. The catalog published in 1909 listed three members of the department of horticulture. Professor Emerson was in charge, altho he was shortly to receive a call to Cornell University. The other two members of the faculty were V. V. Westgate and R. F. Howard, both adjunct professors. W. H. Dunman was landscape gardener.

Forestry.—Forestry in which lectures were given in the early years of the University was once regarded as merely a branch of horticulture. However, in later years of this period when the regular courses in forestry began to be given, the subject was not so closely related to agriculture. The regents' report, for the two years ending with 1904, announced that "the courses in Forestry, which have been in operation over a year, are proving popular, the likelihood being that demand for training in this interesting branch will increase in the near future, especially through the afforestation policy adopted by the National Government, which has already been put in operation within our State." This work was under the supervision of the dean of the Industrial College rather than the associate dean in charge of agriculture. Francis G. Miller was professor of forestry. In 1906 he was made a member of the Experiment Station staff. He was succeeded by Prof. F. J. Phillips, September 1, 1907. When the Industrial College

was separated into the College of Agriculture and the College of Engineering in 1909, forestry became a branch of work in the College of Agriculture.

Agricultural Chemistry.—Agricultural chemistry was one of the oldest departments in the University. True, it had not been known precisely as agricultural chemistry, but Prof. Samuel Aughey, the first professor of natural sciences in the University, and later Prof. H. H. Nicholson, had so closely allied themselves with the work of the farm and the experiment station that it may almost be said that they made chemistry an integral part of the agricultural course. Mr. Nicholson became chemist of the experiment station immediately upon its organization.

In the regents' report is the notation that in 1891, "T. Lyttleton Lyon, B.Sc., 1891, Cornell, was appointed instructor in agricultural chemistry." Mr. Lyon and Dr. Rachel Lloyd were listed as assistant chemists of the experiment station, while Mr. Nicholson served as chemist. The old stone house at the college farm was occupied by the chemistry division of the experiment station in 1896. When the new experiment station building was completed about 1900, the chemistry work of the station found quarters there.

The report of the experiment station for 1902 announced that the department of agricultural chemistry had been made an independent department, separate from the department downtown. Prof. Samuel Avery was placed in charge. A course in agricultural chemistry of collegiate grade was listed in the catalog published in 1903. It was given by Doctor Avery and consisted in the analysis of agricultural products. There were two more courses listed, but they apparently were given in the School of Agriculture. Of course before this time instruction in chemistry had been given in connection with both school and college courses.

In 1905 Doctor Avery was placed in charge of the department of chemistry of the University, retaining general direction of the work in the experiment station. He suc-

ceeded Professor Nicholson who had given nearly a quarter of a century of service to the institution. F. J. Alway in 1906 became station chemist and also professor of agricultural chemistry. There were many who rendered splendid service to the college in the chemistry work of the station and college, among them being R. W. Thatcher, now director of the Cornell and Geneva experiment stations, associated with Cornell University.

Entomology.—The department of entomology likewise had a long period of development. It dates back to 1887 when Conway McMillan was elected to the position of entomologist. But even before that time, from 1871 to 1878, Samuel Aughey, professor of natural sciences, had given attention to some of the troublesome pests then found in the state. In April, 1888, Lawrence Bruner was called from the United States Department of Agriculture to succeed Mr. McMillan, who had resigned. It was some time before any regular courses were offered in entomology. In the fall of 1888, students in the botanical seminar asked Professor Bruner to outline a course, and aid them in obtaining some knowledge of insect fauna. In 1890 entomology was offered as a regular course in the Industrial College, and in 1895 the department of entomology and ornithology was established.

At first Professor Bruner made his headquarters in University Hall, then in Nebraska Hall, and later in Mechanic Arts Hall, on the down town campus. From 1893 to July 1, 1895, H. G. Barber was his assistant in the experiment station, and, immediately following Mr. Barber's resignation, W. D. Hunter, now located at Dallas, Texas, in charge of the southern field crop investigations of the bureau of entomology, was appointed instructor in entomology and assistant entomologist in the experiment station, which position he held until 1901. J. C. Crawford, Jr., and W. Dwight Pierce acted as assistants to Professor Bruner between 1901 and 1904. In 1906 ornithology was transferred to the department of zoology and the name of what

remained became the department of systematic and economic entomology. The systematic part of the work was again moved to Nebraska Hall, while the economic part was moved to the farm, where it was housed in Experiment Station Hall. On July 1, 1907, Myron H. Swenk, who had been assistant in the department since 1904, was made assistant entomologist in the experiment station and was placed in charge of the instructional work in entomology given at the farm, he being located on the farm campus while Professor Bruner remained on the city campus. The department of entomology carried on important work in connection with the experiment station, and in the farmers' institute courses, and had from time to time subsequent to 1901 received appropriations from the state because of the fact that the professor of entomology was also state entomologist.

Animal Pathology.—The department of animal pathology is one of the oldest in connection with the college, dating back to the eighties, when Doctor Billings carried on his experiments with hog cholera. Doctor Billings returned to the college again in 1891 and carried on his work for about two years. He was succeeded in 1894 by Dr. Albert T. Peters. Much of this work was in connection with the experiment station, rather than the college, but some courses were also offered. For many years there was a small laboratory and animal house on the farm campus. Dr. J. H. Gain, who had graduated from the Chicago Veterinary College in 1894, and had practiced in Texas for three years, became a member of the department in 1901. Dr. L. B. Sturdevant began giving instruction along this line in the School of Agriculture in 1903, and for several years was associate professor of animal pathology. A new building for the department was erected in 1908 and was occupied beginning with the year 1909.

Dairy Husbandry.—The department of dairy husbandry had its beginning along with the School of Agriculture. Prof. A. L. Haecker in 1896 was made assistant in agri-

culture. The erection of the old dairy building in 1896 apparently marked the real beginning of dairy work. The department of dairy husbandry became an independent department about 1900. Professor Haecker remained with the department thruout the years mentioned in this chapter.

Animal Husbandry.—The department of animal husbandry was organized in 1897. C. H. Elmendorf, a retired Hereford breeder, gave his services without pay in order to get the department under way. In 1899, E. A. Burnett, then professor of animal husbandry in the Agricultural College of South Dakota, was called to Nebraska. Professor Burnett, later to become Dean Burnett, had graduated from the Michigan Agricultural College, and had served at that institution as an instructor. During the first two years Professor Burnett handled practically all of the instructional and experimental work of the department, and at the same time was superintendent of farmers' institutes.

His first appropriation for livestock was $1,500 which was spent for Hereford cattle. The fact that Professor Burnett about 1901 had become associate dean of the Industrial College and also director of the experiment station made it necessary to secure an assistant. At this time H. R. Smith joined the faculty. Professor Smith had been a student under Dean Burnett in the Michigan Agricultural College, and later did postgraduate work in the University of Wisconsin. The department of animal husbandry soon became one of the leading departments in the college. In two years Professor Smith became a full professor and was placed in charge, altho Professor Burnett, now associate dean, retained supervision. There were men of more than ordinary ability who were connected with this department during the next several years, up to about 1910, including A. F. Magdanz, C. W. Pugsley, Robert C. Ashby, Ellis Rail, C. B. Lee and H. J. Gramlich. Mr. Pugsley was later to become head of the Agricultural Extension Service of the College, assistant secretary of the United States Department of Agriculture, and finally president of the South

Dakota Agricultural College. Mr. Gramlich, who graduated from both the School and the College of Agriculture, was later to become head of the department of animal husbandry. In 1908, the present judging pavilion was erected at a cost of $30,000, and has served as the headquarters of the department since.

Agricultural Engineering.—The department of agricultural engineering is one of the newer departments of the college. Prior to the fall of 1904 some work in the farm mechanics line had been given in the engineering shops at the University. In the summer of 1904 the Board of Regents set aside $15,000 for buildings and equipment at the college farm. This money was expended in the erection of a machinery hall and shops building, a red brick structure still standing on the campus, at a cost of $10,500, and in equipping the blacksmith shop. J. B. Davidson, a graduate of the University of Nebraska in mechanical engineering, was put in charge of the work, under the direction of the mechanical engineering department of the University. He gave instruction in forge work, farm machinery, and farm motors. The work was known as farm mechanics, rather than agricultural engineering, however. But after a year Professor Davidson resigned, and soon L. W. Chase, under whom the department grew rapidly, was placed in charge.

From 1904 to 1907 the department was under the mechanical engineering department of the University, but in 1907 it was made a special department under the direction of the associate dean of agriculture. In 1910 it became known as agricultural engineering, subject to both the Agricultural and Engineering Colleges. In 1907 A. A. Baer became instructor in carpentry. O. W. Sjogren, the present chairman of the department, became associated with it about this time.

Agricultural Botany.—Botany of course was an old subject but with the development of agricultural work the department of agricultural botany grew up at the farm.

The first botany to be taught at the farm was that in the School of Agriculture. The teacher of the first classes was Miss Cora Frances Smith, later Mrs. George O. Smith, Jr. This laboratory was located in the old dairy building. The teaching of botany in the school was carried on mainly by teachers sent out from the city campus.

In 1905 the work in agricultural botany was placed upon an independent basis with the appointment of Dr. F. D. Heald as professor of agricultural botany and station botanist, succeeding in the latter position Doctor Bessey. The headquarters of this department were in the new Agricultural Hall. Doctor Heald resigned and Dr. E. Mead Wilcox was elected to fill the vacancy beginning September 1, 1908. Among those associated with the department in the later years of this period were Prof. R. E. Stone and Prof. G. H. Coons. Plant pathology by this time was becoming almost a subject of its own, and in fact, constituted a great part of the work of this department, especially in an experimental way.

Agricultural Education and Agricultural Economics.—Instruction in agricultural education and in agricultural economics had its beginning in the School of Agriculture. In 1900 Prof. A. E. Davisson was given the title of director of the School of Agriculture and professor of agricultural education, the latter title apparently being awarded to give him University standing. In 1901 his title was changed to principal of the School of Agriculture and professor of economics therein.

With the establishment of the Teachers College in 1908, one branch of its work under Professor Davisson was given over to agricultural education. In the catalog published in 1909 one will find listed in the curriculum of the newly established College of Agriculture, a department of agricultural education. This work was under the direction of Professor Davisson and included one course in agricultural economics and one course in agricultural pedagogy. The course in agricultural economics dealt with such questions

as the factors of agricultural production, the organization and size of the farm, the forces and conditions which determine the prices of agricultural products, etc. The course in agricultural pedagogy was designed to afford instruction in methods of teaching agriculture to rural and high school students.

Other Departments.—There were many other departments that contributed to the agricultural courses of the Industrial College, as well as to the experiment station. Dr. E. H. Barbour and Dr. G. E. Condra contributed instruction in geology and geography, and Doctor Barbour was also a member of the experiment station staff. Prof. G. A. Loveland and Prof. G. D. Swezey offered instruction in meteorology and filled positions on the experiment station staff. In fact, there were always a number of courses that were on the border line of agriculture and of which full use was made.

The library at the farm had been growing gradually for a number of years. Miss Edna C. Noble, in charge at the present time, first became associated with the work at the farm in 1904. At that time the library occupied quarters in Experiment Station Hall and consisted of some 5,000 books, mainly reports. Today (1924) the library has between 16,000 and 17,000 books and subscribes to some 600 periodicals. The library is now housed in Agricultural Hall.

It perhaps would not be amiss to state that it was in this period, from 1891 to 1895, that General John J. Pershing was at the head of the military department of the University.

By the time the year 1908-09 came around there were two main agricultural courses being offered in the Industrial College. One was known as the general agricultural group and the other the technical agricultural group. The general agricultural group for the first year embraced animal husbandry, dairy husbandry, chemistry, French or German, botany, rhetoric, and military drill. The second

year the course embraced horticulture, animal husbandry and animal pathology, physics, rhetoric, mathematics, geology, and military drill. The third year there were soils, field crops, forestry, general meteorology, English literature, and elective courses. The fourth year embraced political economy and agricultural economics, and elective ccurses.

The technical agricultural group the first year embraced chemistry, agricultural subjects (in this classification were included agricultural botany, agricultural chemistry, animal husbandry, field crops, forestry, horticulture and soils), botany, rhetoric, French or German, and military drill. The second year the course included agricultural subjects, science, French or German, rhetoric, and military drill. The third year it embraced agricultural subjects, science, and language or literature. The fourth year it included agricultural subjects (including thesis), agricultural economics, and electives.

The course offered in home economics has already been described. In 1909 the Legislature reorganized the Industrial College, creating the College of Agriculture and the College of Engineering, but this will be left for our succeeding chapter.

The college farm had prospered greatly in these eighteen years and now handled a large part of its own instruction. The catalog for 1909 announced that instruction in agricultural botany, agricultural chemistry, agronomy, animal husbandry, dairy husbandry, entomology, home economics and horticulture was given at the college farm. The general cultural and academic courses were naturally given on the downtown campus. The University downtown and the college farm had been brought in close touch by the construction of a street car line to the latter in 1903. The farm was now well provided with buildings, as readers have no doubt judged from the mention from time to time of new structures erected. There were now the old dairy building, Experiment Station Hall, Agricultural Hall, the

small horticultural building, the home economics building, the judging pavilion, Machinery Hall, and the veterinary building, besides those serving as barns, sheds, etc.

THE EXPERIMENT STATION

Nebraska agriculture may be said to have come into its own in the eighteen years from about 1890 to 1908. The effect of drought became less severe, land prices rose, farmers began to get ahead financially, and the state became more prosperous. Naturally the Agricultural Experiment Station played a large part in such a development. It found the demands on its services no longer limited to a few isolated lines of activity, but embracing the whole field of agriculture. These were years of new crops for Nebraska, such as alfalfa and winter wheat. Sugar factories were established. More attention was given to the raising of stock. With the establishment of the North Platte Substation in 1904, the station began to work out successful plans of operating the western Nebraska farm.

Financially the station was better off. The Adams Act of 1906 provided another $15,000 a year of federal money, in addition to the $15,000 provided by the Hatch Act of 1887. The Adams Act provided that $5,000 should become available on June 30, 1906, and that this should be increased $2,000 a year until in 1911 the full $15,000 would be available then and each year thereafter. The spending of the money provided for in the Adams Act was limited, however, to original research and could not be used for general administration, printing, or popular demonstration purposes. There was more liberality in the spending of the Hatch funds.

To gain a brief estimate of what the experiment station was accomplishing during this period, one should turn to the report of the experiment station for 1904, enumerating some of the outstanding achievements up to that time:

Before any beet sugar factories were erected, the station proved "the adaptability of our soil and climate to beet

raising. The results of these experiments were important factors in the establishment of three beet sugar factories."

The winter wheat area of the state was developed largely thru the work of the station. "In 1900, the seed of hardy strains of Turkish Red and Big Frame wheat was sent to four hundred farmers in northern Nebraska and in southwestern Nebraska west of the 100th meridian. . . . The increase in winter wheat production of 10,000,000 bushels per year in this state since these experiments were undertaken has, we believe, been largely due to the results secured from these experiments."

The Kherson oat developed by the station was imported from Russia in 1897. Prof. F. W. Taylor, who had been connected with both the department of horticulture and the farmers' institutes in Nebraska, brought the oat home from Odessa, Russia. It was found to yield several bushels per acre more than any other variety then grown in central or western Nebraska.

"Among the most progressive farmers the practice of the methods advocated by this station has resulted in increasing the yield (of corn) as much as ten bushels per acre. It is not too much to say that a continuation of this process of education will result in an average increase of five bushels per acre throughout the state. This will mean approximately 35,000,000 bushels of corn, worth $10,000,000 every year to the farmers of the state."

The station demonstrated that apple scab could be largely controlled by the use of two sprayings with Bordeaux mixture.

The station demonstrated that cover crops are of great value "in making more hardy such trees as peaches, Japan plums, etc., which have a tendency to grow too late in the fall," and also protect the ground from freezing in the winter.

"Experiments in mulching garden vegetables have shown that a straw mulch increases the yield of certain vegetable crops like cabbage, tomatoes, beans, cucumbers, and pota-

toes over yields which would be secured only by the most intensive methods of tillage."

"From a study of the forests and forest trees of the state the station many years ago began to urge the planting of trees on the sand hills, resulting in the establishment at the present time of two large Government Reserves on which trees are now being successfully planted."

Early in this period the station advocated the introduction of clover and alfalfa, which became common forage crops.

The Nebraska station was the first in America to discover the cause of the killing of cattle by eating green sorghum, which contained prussic acid. This same sorghum was apparently harmless after being cut and dried for hay.

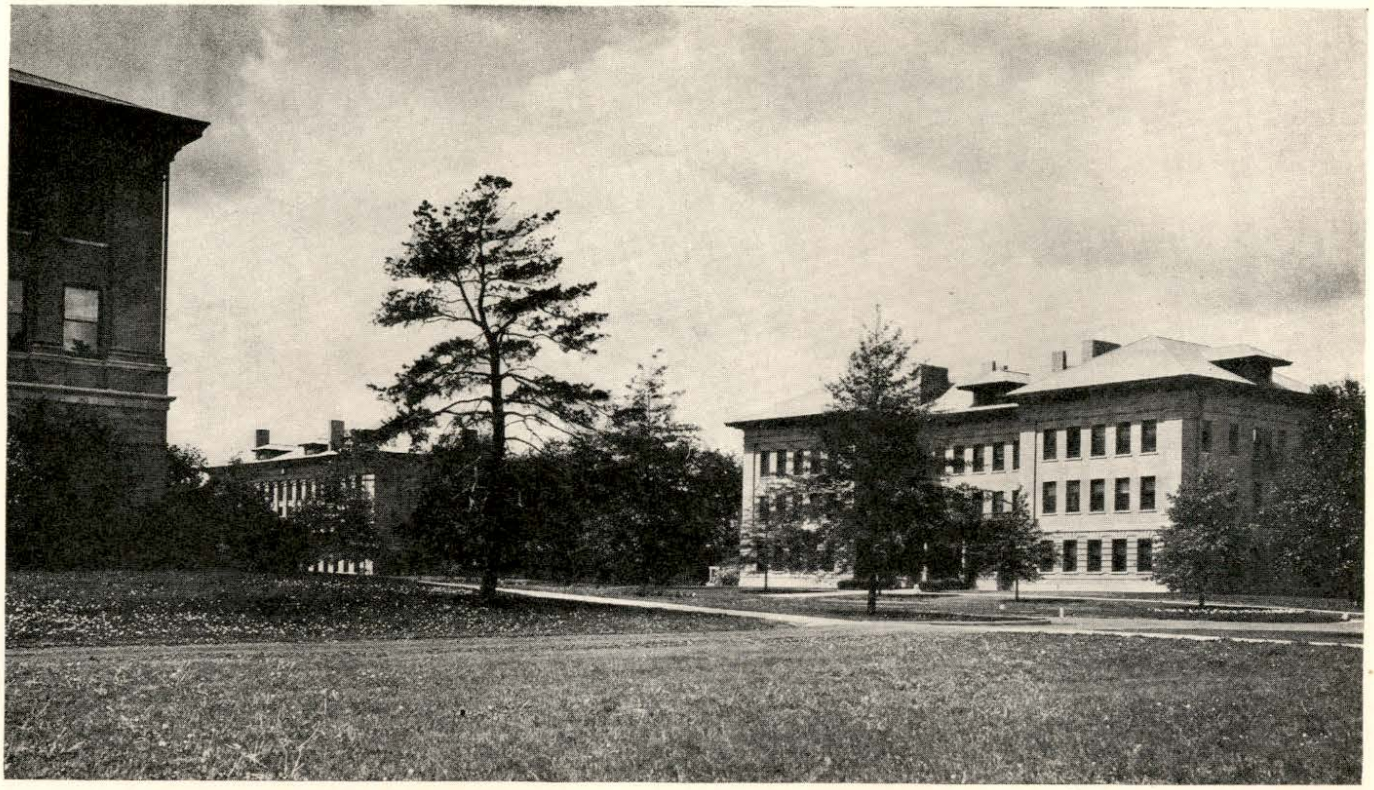
In 1894 an investigation showed an annual loss of 17 per cent of the cattle in the range country due to blackleg. The station became the distributing agent for the bureau of animal industry and advocated that stockmen vaccinate their cattle. Hundreds of thousands of doses of vaccine were sent out to the stockmen free of charge. By 1901 the loss from this disease had been reduced to about 1 per cent.

Six years after the establishment of a dairy department at the experiment station, Nebraska had advanced from twentieth place in the Union to tenth place as a dairy state. The number of dairy cows in the state had increased about 200,000.

The station was prominent in determining what methods would best maintain and increase the humus in the soil, rotation of crops, etc.

Feeding experiments with different rations showed the economic value of alfalfa and highly protein foods when fed with corn. Other valuable feeding experiments were conducted from year to year.

The idea of using alfalfa as a supplement to corn in cattle feeding, which was gradually developed during this period, it may now be said, was of untold value to the state. It helped Nebraska to achieve its present position as a beef



HOME ECONOMICS BUILDING (AT THE RIGHT)

and pork producing state. Before the coming of alfalfa, the popular and common ration was corn and prairie hay. The replacement of the prairie hay by alfalfa resulted in a very substantial lowering of the cost of beef production. One reason Nebraska has never shown economy in feeding silage to fattening cattle is this wonderful combination of corn and alfalfa. Silage has never been produced in Nebraska at a cost comparable with alfalfa hay in beef cattle feeding operations. Alfalfa could also be had at a much lower cost per pound of gain than commercial protein feeds.

SUGAR BEETS AND BEET SUGAR

Two big things emphasized during the early years of this period were the experiments carried on with sugar beets and the investigations into animal diseases. "Perhaps more has been done in this Station in leading in a thorough investigation of the sugar beet problem and of animal diseases than in any other two lines of investigation," states the University catalog published in 1899. "No state in the Union has made a more thorough research into the many questions relating to the growth of the sugar beet, and its manufacture into sugar than has Nebraska, and no small portion of the solution of these questions has been carried on under the provisions of the Experiment Station Act, and by means of the funds coming from the general government. Much the same is true of the careful and painstaking and necessarily expensive work that has been undertaken in the investigation regarding the causes and cures for the various diseases of domestic animals."

It will be recalled that early in the history of the Agricultural College attention was being given to determining the possibility of growing sugar beets in Nebraska. But during this period of some eighteen years three sugar factories were to be established in Nebraska, and were to lay the foundations for the great development of beet growing in the North Platte Valley later on. Much of the credit for the development of the industry in the late eighties and

early nineties should go to Prof. H. H. Nicholson of the University, who was unsparing of time and effort in developing the industry in Nebraska.

In 1890 a factory for the manufacture of beet sugar was completed at Grand Island, the second oldest successful beet sugar factory in operation in the United States today. At the Grand Island factory in 1890, 1,400,000 pounds of sugar was manufactured. Enterprising citizens of Grand Island had contributed a subsidy for the sugar factory as well as guaranteeing a certain acreage of beets. A factory was completed at Norfolk in 1891, the citizens there contributing a subsidy toward the factory's erection. In 1893, 1,671 acres were harvested near the Grand Island factory, producing 11,149 tons of beets and 1,835,900 pounds of sugar, and at the Norfolk factory, 2,807 acres, producing 22,625 tons of beets, and 4,107,300 pounds of sugar. Both the State of Nebraska and the Federal Government for a number of years provided a bounty on sugar. S. C. Bassett in his excellent article published in the report of the State Board of Agriculture for 1895 states that the total bounty received by Nebraska sugar producers thru 1894 was $310,791.50 from both state and federal sources.

One of the unique features of the work carried on by the University in behalf of the sugar industry was the Sugar School. It was one of two such schools in the United States. Apparently the first session of this school was held in the school year of 1891-92. The University catalog, published in 1896, conveyed the information that "the objects of the school are to give instruction in the best methods of sugar beet culture and in the details of factory methods of sugar making. Especial attention will be given to the chemical control of sugar factory operation." The school was open to young men sixteen years of age or over, who had had the requisite training for carrying on the work. The catalog of 1896 announced that hereafter the school would open at the beginning of the University year "instead of in the middle of the year as heretofore. The school will

be in session during the manufacturing season and classes will have the opportunity of visiting the sugar factories while in operation, and the large beet farms during harvest time," the catalog stated. The course included among other things instruction in elementary chemistry, the technology of sugar manufacture, sugar beet culture, steam and electrical machinery, and irrigation engineering. The enrollment of the school was never particularly large. The catalog published in June, 1896, gave the enrollment of the Sugar School as thirty-four. The enrollment in 1898-9 and 1899-1900 was only two each year. In April, 1900, the regents discontinued the school. It was stated that in order to develop the school properly a considerably enlarged equipment would have been necessary for which funds were lacking.

In 1899, the Standard Beet Sugar Company started a factory at Leavitt, near Ames, Nebraska. Sugar beet experiments were conducted on the farm of the Standard Cattle Company at Ames, Neb. by the University beginning about 1898. The company provided a well-equipped laboratory for carrying on the analytical work. The laboratory was in charge of C. L. Sovereign, a graduate of the Sugar School. "Summing up the season's work at Ames (1898) shows a production of some five acres of beets as an aggregate of the various experimental plats, giving an average of about eighteen tons to the acre, at the general cost of about thirty-five dollars per acre," Professor Nicholson stated. "In the course of the season between ten and eleven thousand analyses of beets have been made including ten thousand analyses of mother beets to be used in the future for seed production."

To one who today understands the complicated nature of the beet sugar industry and the large staff of experts which the sugar companies themselves have developed, it seems quite a wonderful achievement that sugar factories could be operated successfully in those days. It was not an easy matter to grow beets and develop an industry. The college

itself was confronted with scores of problems which it endeavored to solve in co-operation with the Department of Agriculture at Washington, the sugar companies, and the farmers themselves. There were investigations as to fertilizers and methods of cropping, experiments with varieties of beets, and chemical experiments in methods of estimating the amount of sugar in beets. Beet seed was distributed to farmers and they were asked to make reports on their work, as well as send in beets for analysis. Back in 1890 a score or more of substations to try out beet growing were established in various parts of the state, and three young men from the chemistry department were detailed to visit the farms. "Each year, with its unfailing change in climatic conditions, adds something to our knowledge of this important industry," says the report of the station for 1896.

The beet sugar development of this period apparently reached its peak in the early 1900's. The factory at Norfolk was moved to Lamar, Colo., in 1905, and in 1910 the Leavitt factory was moved to Scottsbluff. In the next ten years the great development of sugar beet growing was to come in the North Platte valley.

MANY TYPES OF INVESTIGATION

Dr. Frank S. Billings, who had been associated with the experiment station in the late eighties, again took up his work with animal diseases in 1891, a committee from the live stock association of the state having urged early that year that the investigational work be renewed. Doctor Billings resigned in 1893, and on February 1, 1894, Dr. A. T. Peters took up the work. For several years the experiments looking to the eradication of hog cholera continued, but the work in animal diseases also broadened out. Doctor Peters carried on his work at the college farm. In a little less than a year Doctor Peters was called upon to make 1,841 personal examinations of different animals, and 164 post mortems. Of the examinations 672 were hog

cholera. Three hundred cases were the cornstalk disease in cattle and 431 were scabies in sheep. Doctor Peters did considerable traveling over the state, besides teaching in the school and college. Many of the outbreaks of animal diseases were attributed to unsanitary conditions.

The wide extent of the work of Doctor Peters is shown by the fact that he published a report on the diseases of poultry and also a paper on caponizing. There were cases of anthrax, blackleg, cornstalk disease, keratitis, glanders, rabies, tuberculosis, ergotism, calf cholera, and many other diseases. In 1897 Dr. Charles M. Day was detailed to represent the United States Department of Agriculture in cooperative experiments looking to the eradication of hog cholera. C. H. Walker, a "practical" man, was also detailed to represent the State Swine Breeders' Association in the experiments. Bulletins published by this department from 1890 to 1908 included one on the corn-fodder disease in cattle and one on Texas fever by Doctor Billings, one on serum therapy in hog cholera, published in 1897, one on cornstalk disease, one on blackleg, one on extermination of prairie dogs, one on malarial fever in horses, and one on ergot and ergotism. It will be recalled that Dr. J. H. Gain joined the department in 1901 and a building was erected for the department in 1908.

Another line of work in which a good beginning was made was irrigation. The name of O. V. P. Stout, as irrigation engineer, first appeared on the staff of the experiment station in 1896, altho some work had been done before that time. In fact, Bulletin No. 1 of the experiment station was entitled, "Irrigation in Nebraska." It had been written by Lewis E. Hicks and published in 1888. Mr. Stout in 1895 published a bulletin on the "Water Supply in Nebraska." At this time there had already been considerable work done in irrigating along the North Platte River in Scotts Bluff County. People were beginning to think seriously about the matter. The editor of an irrigation magazine was quoted as saying "at this time Nebraska, in

the extent of visible public interest, leads the procession among the irrigation states of the Union."

The North Platte River was pointed out as being the most important stream in Nebraska for irrigating purposes. The area under the ditch tributary to that river was then believed to be in excess of 200,000 acres, while including that surveyed for irrigation, the total was at least 600,000 acres. The Loup, Republican, and South Platte Rivers were also mentioned, but it was pointed out that in the case of the Loup, there was less need for irrigating lands, while the Republican was not an ideal irrigation stream.

An interesting bulletin was one written by Prof. E. H. Barbour, and published about 1899. It was entitled, "The Homemade Windmills of Nebraska." One would hardly have believed that so many varied types of windmills, made at home, could have been found in Nebraska. This bulletin copiously illustrated with diagrams was one of the unique bulletins of the experiment station. At this time it was thought that the windmill would be quite serviceable for irrigation, and so it proved, for small patches of ground.

This period in the history of Nebraska farming and Nebraska experiment was not without its humorous side. For instance, there was sacaline, which dealers were trying to foist upon the farmers. Even when it was once proved that it was no good as a forage crop, the dealers in seeds and roots hit upon the plan of proclaiming that there were two kinds of sacaline, and the kind that the farmers found so discouraging was of course the kind that was "worse than worthless" and would the farmers please try some of their sacaline, which was the other kind. Doctor Bessey thus disposed of the matter in 1895: "No animal has ever shown the least inclination to eat it in any condition. When old it is very hard and harsh, and nothing but a starving animal would think of getting food from its wire-like twigs. Although our plants grew to but about three feet in height the main stems were nearly three-fourths of an

inch in diameter, and nearly as hard as gas pipes. Sacaline is a rank fraud."

"It will be far better to have nothing to do with this humbug and to make every effort to secure good fields of that tried and reliable forage plant, alfalfa, which, in my judgment, is the coming forage plant for Nebraska," Doctor Bessey remarked in another place. How accurate and far-sighted Dean Bessey was!

There was the boom in chicory, when people evidently thought it would be as popular as coffee. The college published a bulletin on that subject in 1897. "Having demonstrated that the chicory plant is capable of adapting itself to the Nebraska soil and climate," the station was now making an investigation as to the best methods of cultivation. In fact, there was no limit to what might be tried. Nut culture was even "investigated" in 1893.

The years 1892 to 1896 were characterized by serious injury to the grain crops of Nebraska by chinch-bugs. In 1865 it had been discovered in Illinois that the chinch-bug was susceptible to epidemic diseases produced by certain parasitic fungi. In 1888 an effort was made in Minnesota to spread those diseases artificially, and the idea was taken up energetically in Kansas during the years 1889 to 1896. Professor Bruner secured infected bugs from Kansas in 1893 and the Nebraska station began sending out "inoculated" bugs to Nebraska farmers upon request. In order to do this, farmers sent in perfectly healthy bugs, which were given the disease and sent back to spread it among their neighbors in the field. "In order to carry out this plan," said Professor Bruner, "the authorities of the University have found it necessary to have a large number of live, healthy bugs from time to time; and, as it is impossible to send representatives into the field whenever bugs are needed, they have found it necessary to require the farmers who want aid to send in these live bugs. These can be placed in a tight tin box along with sufficient green food to last them on the road. . . . There will be sent

in return as soon as possible a package containing 'sick' bugs that can be used in communicating the disease to the bugs in the field."

Nearly 1,000 lots of infected bugs were sent out to 600 individuals in a campaign ending in 1894, and in spite of unfavorable weather for the development of disease among the bugs, the farmers receiving them in many cases noted the presence of diseased bugs in their fields and attributed this to a successful introduction of the disease thru the shipment of "inoculated" bugs. The next year some 400 lots of the bugs were sent out, and the results were reported as not being satisfactory in some cases, while in others it was indicated that with favorable weather conditions large numbers of the insects would have been killed off. This work was given up after some years, for investigations showed that the spores of the fungus producing the disease among the chinch-bugs were generally distributed thru the soil of the infested region, and, whenever the conditions were right, the disease would break out of itself without the introduction of "inoculated" bugs. In recent outbreaks of the chinch-bug in Nebraska and other states, misplaced faith in the efficiency of distributing "inoculated" bugs has been something of a handicap in securing the adoption of more laborious but more practical and dependable methods of control.

In recent years one has heard now and then about the possibility of farmers burning corn for fuel. Back in the nineties that was quite an important question. *Press Bulletin* No. 8, of the Agricultural Experiment Station, dealt with this question. An actual test was made at the University, yellow dent corn being burned in comparison with Rock Springs nut coal, careful records being taken. It was found that one and nine-tenths times as much heat was liberated in burning one pound of coal as in burning one pound of corn. With corn at 9 cents a bushel, coal was worth $4.87 a ton, and when corn was 15 cents, coal was worth $8.11.

THE NORTH PLATTE STATION

An important feature of this period was the establishment of the first substation by the University. Altho there had occasionally been some work done by the experiment station at various points in the state, these stations and experimental plots had not been permanent. In most cases the property belonged to someone else and the work was usually of small magnitude. The Legislature of 1903 appropriated $15,000 for the establishment of a substation west of the 100th meridian "to determine the adaptability of the arid and semiarid portions of Nebraska to agriculture, horticulture, and forest tree growing, such as the production of grain, grasses, root crops and fruits of kinds commonly grown in the same latitude in other states; also the most economical methods of producing such crops without irrigation."

A committee of citizens at North Platte subscribed about $8,000 toward the purchase of a tract of land of 1,920 acres four miles south of the town. The farm comprised about 270 acres of bench land under an irrigation ditch, about 150 acres of level table-land, and 1,500 acres of rough pasture. W. P. Snyder, who had been associated with the station at Lincoln, became superintendent of the North Platte Substation. Experimental work was begun in 1904. Almost immediately after its acquisition feeding and crop experiments were undertaken on the farm. During the next couple of years $10,000 was expended for a superintendent's house, horse barn, moving and enlarging the foreman's house, the construction of sheds for cattle and hogs, and the construction of about five miles of fence on the farm. The work at this substation consisted especially in developing better methods of stock raising and farming for the western country. In 1908, W. W. Burr, later to become agronomist and assistant director of the Agricultural Experiment Station, was made assistant in soils and crops at North Platte.

EXPANDING WORK

It would not be possible within the brief limits of this history to describe every line of work in which the experiment station was engaged. Many of them were enumerated briefly at the beginning of this section. The experiment station found itself becoming responsible for more and more special work. By an act of the Legislature in 1893 the professor of botany was made the acting state botanist, the professor of chemistry the acting state chemist, the professor of geology the acting state geologist, and the professor of entomology the acting state entomologist. In 1911 the regents of the University were empowered to appoint a member of the teaching staff as state entomologist and another member as state geologist. Their duties were to furnish information requested by any official and to arrange and exhibit collections in their departments to show the varied resources of the state. Another line of work which was taken up by the University was that of seed testing. The laboratory in the department of agricultural botany for the testing of seeds was established about 1908 in co-operation with the United States Department of Agriculture. Some work along this line had occasionally been done before. For the most part the seed testing consisted in determining the percentage of weed seeds or adulterants. Later this work was carried on at the state capitol.

By the latter part of this period the station had achieved a permanent and lasting place in Nebraska agriculture. The extent of the inquiry and bulletin work is evident from the fact that in 1907 25,285 first-class letters and 14,868 postals were sent out as well as nine tons of bulletins.

The fourth annual report of the experiment station giving a statement of the work accomplished in 1890 listed just nine members of its working staff, besides the director and treasurer. The report for 1909 listed twenty-seven members of the staff besides the director and executive clerk. Out of those who were listed on the staff of the

experiment station in 1890 but three today (1924) retain a connection with the University, J. S. Dales, Lawrence Bruner, and S. W. Perin. J. S. Dales, who was listed as treasurer of the station, is corporation secretary of the Board of Regents, having given approximately a half century to the service of the University. We have already heard of Mr. Bruner. S. W. Perin, superintendent of the farm, and W. W. Marshall, who became executive clerk in 1895, are two figures familiar to all students who have ever attended the Agricultural College.

It would hardly be possible to enumerate the names of all those who have been connected with the station from time to time. Those who served as its directors in this period include the names of Hudson H. Nicholson, C. L. Ingersoll, Chancellor George E. MacLean, Chancellor E. Benjamin Andrews, and E. A. Burnett, the latter since 1901.

A prominent figure in the work of the experiment station in this period was Samuel Avery, now chancellor of the University. When the question of bleaching flour was much discussed, he conducted experiments and announced that "the minute traces of yellow color present in flour can be bleached with such minute amounts of nitrogen peroxide that it is difficult to detect any effect on the flour other than the bleaching and the presence of nitrites." Doctor Avery also did a great deal of work in the study of the poisoning of cattle by sorghum and kafir corn, previously alluded to.

All branches of agriculture had now begun to receive attention and the station found itself answering questions on all sorts of subjects. Corn and wheat, the two big crops, became more and more prominent. Regarding the development of winter wheat in Nebraska, a copy of *Agriculture* for April, 1906, stated:

"The introduction of winter wheat into Nebraska has been very largely influenced by the experiments undertaken by the station to demonstrate what varieties were hardy and over what range of country hardy varieties could be grown with profit. In this experi-

ment more than 100 varieties of winter wheat were sown. Most of them were unprofitable, many of them entirely valueless; but a few varieties, notably the Turkish Red wheat, were proven to be hardy over a large area of the country which had previously grown nothing but spring wheat, and as a result of this experiment it is safe to say that the winter wheat production in the state has been increased more than 10,000,000 bushels per year, making wheat production profitable where spring wheat had been unprofitable, and substituting winter for spring varieties in many sections of the state."

The report of the experiment station for 1907 stated:

"The work which this Station has done in the extension of the winter wheat area of the state has resulted in very greatly increased areas of wheat, carrying this extension first to the southwest, then to the northeastern section of the state, where production has increased more than 9,000,000 bushels in the last seven years, and more recently extending winter wheat production into the northwest area of the state thru the work of the Substation at North Platte, where the yields of winter wheat upon summer tilled land have exceeded the average yields of wheat in the eastern counties of the state under the methods of production in common use."

"The work of the Experiment Station in promoting the corn industry of the state has been large and efficient," the same report declared. "Within the last five years, under the stimulus and advice of the Experiment Station, more accurate and exact study of the improvement of corn has been made than in all the years which preceded."

FARMERS' INSTITUTES

During these eighteen years the University and college greatly enlarged their sphere of state activity. It was not alone in experimental work that the institution was active, but in the sometimes more difficult task of getting the people of the state to adopt its progressive methods of farming and stock raising.

Back in 1894 the University regents advocated the development of the county high school to bridge the gap that existed between the rural ungraded school and the University. A department of university extension was

organized in 1895 which had for its object the holding of lecture courses in the small towns of the state. Farmers' organizations began holding their meetings at the University. These meetings were finally grouped together in one big week and that became the "Organized Agriculture" of today, when practically all the agricultural societies of the state come together at the Agricultural College for a week of meetings and instruction. In the summers of 1899 and 1900 there were excursions from a number of points to Lincoln in order that farmers might visit the Agricultural College. "Professors of agriculture and related branches have by their publications and their conduct of classes exerted much valuable influence in launching agricultural and nature study teaching in the common schools," the regents' report for 1904 stated.

The farmers' institute was, however, the big development in carrying the message of better farming to the people of the state. Where there had been heretofore one institute, there were now a score of institutes. The foundation was being rapidly laid for the department of agricultural extension which during the succeeding years was to work out such a great program.

The great drawback to the development of farmers' institutes in years past had been the lack of funds for taking care of the overhead expenses and lack of a centralized management of the entire program of institutes. In April, 1896, the University of Nebraska took the matter in hand and appointed Prof. F. W. Taylor, superintendent of farmers' institutes. In an article published in the report of the State Board of Agriculture for 1896, Professor Taylor told something of the organization and means of carrying out the institutes:

"The state legislature makes no provision for Farmers' Institutes. There is, however, a volunteer state association originated for this work, composed of the Regents of the University of Nebraska, State Board of Agriculture, State Horticultural Society, State Dairymen's Association, State Poultry Association, Improved Live Stock

Breeders' Association and State Bee Keepers' Association. Small contributions from each of these organizations constitute a fund for incidental expenses. Each association furnishes four speakers for the season's work. The railroads in the state provide free transportation for speakers who are required to travel to fill appointments.

"The program for each Institute will cover two days, of three sessions each, commencing at 9 a. m., 1:30 p. m., and 7:30 p. m., respectively. The four speakers sent by the central office will use about half a session, each, on an average, and the other two sessions, as well as the time unprovided for in the sessions in which the speakers from abroad come, are to be covered by home talent."

The central organization arranged for speakers and paid their traveling expenses, while the local organization paid their hotel expenses, arranged for advertising the meeting, and provided a hall. It was usually suggested that before holding the institute, a local organization should be formed to sponsor it. Professor Taylor announced that as far as possible four institutes were to be held each week so that the speakers could travel on a circuit.

The first legislative appropriation was made in 1897 when $3,000 was placed in the hands of the University to help defray institute expenses during the next two years. This was increased in 1901 to $8,000 for the biennium, in 1903 to $12,000, and in 1907 to $20,000.

During the season of 1899-1900, fifty-one institutes were held in thirty-three counties. During the season of 1900-1901, sixty institutes were held, twenty-one of them being one-day meetings, and thirty-nine two-day meetings. The next season, with the increased appropriation, eighty-six institutes were held. In 1903-1904, forty-three one-day institutes were held and forty-nine two-day institutes. In 1904-1905, 150 institutes were held. The next season there were 160 institutes, and the season after that, 1906-1907, 136. In 1907-1908 there were 189 institutes with a total attendance of nearly 100,000. In 1908-1909 there were 177 institutes. The figures for the last two seasons included the boys' and girls' institutes, a number of which began to be held about this time. Most of the farmers' institutes

were held during the winter months. A few were held in the summer, but they were not a great success.

There was quite a development of the educational side of the farmers' institute in its later years. "At the early Farmers' Institutes the speakers merely gave their lectures, while the institute speaker of today is expected to illustrate his lecture, then score exhibits of corn and other grains and conduct a livestock judging demonstration," says the fourth report of farmers' institutes, distributed by the University in 1909. "Ten years ago it is safe to say two-thirds of the institute audiences were present to be amused or entertained but now the halls are filled with men and women anxious to receive new ideas that will help in working out the problem of the farm and of the home."

But the farmers' institute was more than simply a school. It was a one or two-day holiday, in which everybody joined. There was often a corn show, a crop exhibit, or a display of women's domestic products. There was sometimes a stock judging contest. Some features were put on the program for the pure entertainment.

The first farmers' institute school or short course was held at Pawnee City February 10 to 15, 1908. The short course was a farmers' institute usually lasting for a week. There was a definite program of instruction outlined. At this particular short course there was one week's instruction in stock feeding and stock judging and soils and soil problems for the men, and a week's instruction in domestic science for the women. The work in stock feeding and stock judging was in charge of C. W. Pugsley, then of Woodbine, Iowa, the work in soils in charge of Prof. F. J. Alway and Prof. Alvin Keyser, and the work in domestic science in charge of Miss Myrtle Kauffman. Sixty men and an equal number of women and girls registered for the course. "The Farmers' Institute Schools are intended to aid those who are unable to attend the Short Course at the School of Agriculture, the plan being to take the school to the people," a circular stated. The next season a short

course was held at Broken Bow and a short course at Hebron.

Another development was the boys' and girls' institutes. E. C. Bishop, state superintendent of public instruction, had taken an active part in introducing agriculture into the Nebraska schools and in promoting the work of boys' and girls' clubs. Miss Lulu S. Wolford was also one of the pioneers in this work. These boys' and girls' institutes aimed to do for the boys and girls what the regular institutes did for the grown-ups. There were usually contests in various lines of agriculture. Fourteen boys' and girls' institutes were held in 1907-1908. In 1908-1909 there were thirty-three such institutes. This marked the early beginning of boys' and girls' club work in Nebraska.

"The state department of public instruction has assisted the movement by furnishing literature, suggesting plans for organization, also by the personal efforts of members of the department," says the report for 1909. "The University has contributed publications for the promotion of the work, and sent out speakers and judges at the time of the contest. . . . The movement has, by its natural growth, developed in four years' time from a little state contest with 700 boys and girls in attendance, to 33 county contests, with a total attendance of 9,266. The work is naturally developing into a more permanent form; it obtains the interest of every boy and girl because they realize that in the preparation of exhibits for the contest, the growing of the corn and potatoes, the cooking and sewing, they receive personal benefit."

Speakers for a farmers' institute program were usually drawn from three sources, home talent, outside speakers, and speakers from the Agricultural College. Certainly there was always plenty of discussion on the part of the home talent. The department of farmers' institutes built up quite a list of special speakers who from time to time were sent out on the circuit. Among those whose names are to be found on programs of the later years of this period

DAIRY BUILDING

were Andrew E. Elliott of Galt, Ontario; Prof. C. W. Pugsley, later to become assistant secretary of agriculture; Dr. Samuel Avery, soon to become chancellor of the University; Ex-Governor W. A. Poynter; S. R. McKelvie, later Governor McKelvie; Prof. H. R. Smith; Prof. Lawrence Bruner and M. H. Swenk; H. D. Lute of Paxton, Neb., later secretary of the Nebraska Farm Bureau Federation; Arnold Martin, who became famous as the twenty-acre farmer of Pawnee County; F. W. Chase of Pawnee County; Leonard S. Herron; W. W. Burr, then of the North Platte Substation; Prof. F. J. Alway; E. P. Brown of Davey; Prof. E. G. Montgomery; Prof. Alvin Keyser; Dr. G. E. Condra; Prof. L. W. Chase; Prof. A. E. Davisson; R. N. Conklin of Hooper; Dr. J. H. Gain; Prof. A. L. Haecker; Erwin Hopt; Obadiah Hull of Alma; E. W. Hunt of Syracuse; B. F. Kingsley of Hastings; C. G. Marshall; Dr. A. T. Peters; R. A. Miller of Ashland; W. P. Snyder of the North Platte Station; and many others. The women were not forgotten either for Miss Myrtle Kauffman, Miss Lulu S. Wolford of Pawnee County, Miss Gertrude Rowan of Lincoln, and Mrs. O. J. Wortman of Ashland found a place on the various programs.

Dean E. A. Burnett, thruout these years of great development, held a prominent place in the institute work. After the resignation of Mr. Taylor in 1899, Professor Burnett became superintendent of farmers' institutes. W. P. Snyder was assistant superintendent from 1903 to 1906. Val Keyser became assistant superintendent September 1, 1906, and a few years later, superintendent.

FINANCES

During this period the resources of the institution greatly improved. There were increased appropriations from both the state and the Federal Government. The outstanding feature probably was the action of the Legislature in 1899 in restoring the original one-mill tax for the support of the University. In the very earliest days of the University

there had been a one-mill levy, but it had shortly been cut to a quarter of a mill, and a little later raised to three-eighths of a mill. The one-mill levy enabled the University to erect the much needed buildings and to take care of the rapidly increasing numbers of students.

The five funds of the University were designated by the Legislature in 1899 as the permanent endowment fund, representing the money from the sale of lands; the temporary University fund, consisting of the proceeds of the investment of the permanent fund, rental of lands leased, and the one-mill tax; the University cash fund, made up of fees, income from the farm, etc.; the U. S. Morrill fund, consisting of moneys obtained under the Act of 1890; and the U. S. Experiment Station fund, consisting of moneys obtained under the Hatch Act. All money accruing to the temporary University fund was to be spent for the maintenance of the University, including buildings and permanent improvements.

The Legislature allowed the University more freedom in the expenditure of its own funds. This is discussed in the report of the Board of Regents for the two years ending in 1908:

"Statutory enactments and adjudications by the Supreme Court have wrought some important changes in the methods and policies of conducting university finance. The act of 1907 authorizing the regents to draw upon the proceeds of the one mill levy and the statute of 1899 authorizing the regents to disburse funds of the university, other than those arising from taxation, without detailed legislative appropriation have recently been subjects of judicial review. In state ex rel. Ledwith vs. Searle, 112 N. W. Rep. 380, the Supreme Court held, in substance, that the 'proceeds' of the one mill tax was not limited to such cash as might be received by the treasurer from said tax from time to time, but that it meant the fund, a total definite amount, to eventually accrue from the tax levy, and that this fund was subject to disbursement by the regents, in the manner provided by law, without further appropriation. In state ex rel. Spencer Lens Co. vs. Searle, 109 N. W. Rep. 770, the court also held, in effect, that the statute of 1899 sufficiently authorized the regents to disburse moneys for the university, not derived from taxation,

without detailed legislative appropriation. The board is fully aware of the increased responsibilities involved in these changes of policy."

From time to time the general fund of the state was appropriated for specific purposes, such as the upkeep of the substation at North Platte and the farmers' institute work. The school lands of the state, including the endowment lands of the University, were withdrawn from sale in 1897, altho most of the University's lands had been disposed of by that time. A. E. Sheldon, then a member of the Legislature, was instrumental in putting a stop to the wanton sale of the school lands.

The Federal Government came to the assistance of the University, and especially the agricultural side of the work, with three important appropriations.

The Second Morrill Act of 1890 provided the institution with $25,000 of government money to be used in "instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life and to the facilities for such instruction." The Second Morrill Act provided $15,000 for the year ending June 30, 1890, and an annual increase of $1,000 in the amount, until the total of $25,000 was reached.

The Nelson Amendment of 1907 provided that the money paid the University under the Second Morrill Act should be increased to $50,000. For the year ending June 30, 1908, $5,000 was to be added to the original $25,000 and this was to be increased at the rate of $5,000 a year until the grand total of $50,000 was reached. The Nelson Amendment provided that "colleges may use a portion of this money for providing courses for the special preparation of instructors for teaching the elements of agriculture and the mechanic arts."

The Adams Act of 1906, previously referred to, added $15,000 a year to the original appropriation under the Hatch Act of 1887 for the benefit of experiment stations.

For the year ending June 30, 1906, $5,000 of the additional $15,000 was to be available, and this was increased by $2,000 a year until the total of $30,000, under the Hatch and Adams Acts, was available.

REFERENCES

Agriculture. August, September, 1904; April, 1906; January, 1909; March, 1910; June, 1910 to January, 1911; May, 1911. School and College of Agriculture, Lincoln.

Annual Reports and *Bulletins* of the Agricultural Experiment Station of Nebraska. 1890-1909.

Annual Reports of the Nebraska State Board of Agriculture. 1889, 1890, 1894, 1895, 1896, 1898, 1899, 1909.

CALDWELL, HOWARD W. *Education in Nebraska.* Circular of Information No. 3, 1902, of the United States Bureau of Education.

Catalogs of the School of Agriculture. 1902-1909.

Catalogs of the University of Nebraska. 1890-1910.

Federal Legislation, Regulations, and Rulings Affecting Agricultural Colleges and Experiment Stations. States Relations Service, United States Department of Agriculture, Washington, D. C. 1917.

HILL, D. S. *Introduction to Vocational Education.* Macmillan Company, New York. 1920.

Laws of the State of Nebraska. 1891-1909.

Nebraska Farmers' Institutes. First, second, third, and fourth reports, 1906-1909. University of Nebraska.

PALMER, TRUMAN. *Concerning Sugar.* United States Sugar Manufacturers' Association, Chicago. Loose-leaf.

Reports of the Board of Regents, University of Nebraska. 1890-1910.

TRUE, A. C., and CLARK, V. A. *Agricultural Experiment Stations in the United States.* United States Department of Agriculture, 1900.

The University of Nebraska, 1869-1919. Semi-Centennial Anniversary Book. The University, 1919.

VI

THE CROWNING YEARS

THE years from about 1909 to 1923 were the crowning years in the history of the College of Agriculture. Could Professor Thompson, the first professor of agriculture, and those early residents of the state who wagged their heads at agricultural education have stepped into the farm campus in 1923, Professor Thompson would have found his most sanguine dreams more than realized, while those who scoffed perhaps would have remained to learn. They would have found nine great buildings devoted exclusively to experimentation and instruction, among them the finest agricultural engineering building in the world, a dairy building famous thruout the West, and the best equipped animal pathology plant in the Mississippi Valley. Instead of an unattractive farmstead of the seventies they would have found a magnificent campus laid out with trees and flower beds, a paved street running alongside the farm, and street cars to the door of the institution. Instead of ten or fifteen students studying agriculture, they would have found some one thousand students, men and women, about half of them enrolled in a practical high school course emphasizing agriculture and home economics and the other half enrolled in a regular college course. They would have found some seventy members of the college faculty, and nearly as many more connected with other branches of college activity, a great state-wide Agricultural Extension Service reaching every corner of the state with its force of county agents and extension specialists, three experimental substations in western Nebraska, a school of agriculture at Curtis, Neb., and a fruit farm near Union.

If the preceding period, dating from about 1890 to 1909, was the period in which agriculture came into its own, this was the period in which the Agricultural College came into

its own. The first big thing that happened during these years was the action of the Legislature in 1909 in dividing the Industrial College into a College of Engineering and a College of Agriculture. Once more the College of Agriculture was a unit by itself. The next big thing was the provision of the Legislature in the same year for two additional substations to be maintained in connection with the College of Agriculture. One of these was located at Valentine, and the other near Mitchell. With the substation at North Platte, this now made three substations under the control of the University. Then, in 1911, came provision for the school of agriculture in western Nebraska, located at Curtis.

The Agricultural Extension Service, as it is known today, really had its birth in this period. It was an outgrowth of the farmers' institute, and soon, thanks to the Smith-Lever Act of 1914, providing federal aid, became one of the most important lines of college activity, ranking in importance with the experiment station. Legislation providing for county aid for agricultural agents, or farm demonstrators, was passed by the Nebraska Legislature in 1913, and the first county agents in Nebraska began to be appointed about this time. The development of this extension work, along with that of the experimental substations, will be left for later discussion.

But the thing that made the most difference in the actual appearance and development of the material side of the institution goes back to an agitation which had been going on for a number of years to have the main University on the uptown campus moved out to the Agricultural College, or else to have additional land purchased uptown. Briefly, the University needed more room, both for immediate and for future needs. The attendance in all the schools and colleges of the University had increased to 3,992 (unrepeated names) in 1909-10. In this connection it is interesting to note that by 1915-16 the attendance had increased to 4,826, notwithstanding that a few years before the roster

had been pared by removing the names of students in an affiliated school of music, as well as those taking University extension work without credit. In 1923-24 the total registration had grown to 10,352 in all schools and colleges. Here was vindication for those who had anticipated the future by urging a definite policy of developing the institution.

So in the early years of this period there was constant debate and discussion as to the location of the University, whether it should remain uptown or be moved out to the Agricultural College. The Legislature in 1913, however, decided to refer the matter of location to the people of the state. At the same time it made the important provision that there be a special University extension fund, consisting of the proceeds of a tax of three-fourths of a mill on the dollar valuation of the grand assessment roll of the state, to be levied in 1913 and annually thereafter for six years to and including the year 1918. If the people of the state voted that the main part of the University should stay where it was, one-third of the money realized from the tax was to be available for the purpose of erecting buildings on the farm campus and two-thirds of the money was to be available for development on the city campus of the University.

The people at the general election in 1914 voted to keep the University downtown and so the College of Agriculture came into possession of one-third of the special levy. This special levy was extended in 1919 for another two years. In the latter years, owing to the sudden demands on the University in the way of increased expenses, incident to the War and the subsequent boom, some of the money was used, by authorization of the Legislature, for maintenance and salaries. The building program at the Agricultural College prospered greatly during these years. The plant industry building was erected in 1912 and 1913 at a cost of approximately $87,000. It now houses the departments of horticulture, entomology, the work in botany

and plant pathology, and part of the department of agronomy. The new dairy building was erected in 1916-17 at a cost of $175,000. The agricultural engineering building came next, in 1918, at a cost of $195,000. Finally came the group of buildings for animal pathology in 1919-20, erected at a cost of about $133,000. Of course one might also include in the work of this period the hog cholera serum laboratory, erected in 1911-12, and the horse barn and the new boiler house in 1915-16.

It must be remembered that the World War came in the later years of this period. To the University this meant many things. Students began to withdraw to enter training camps and to enlist in the Army and Navy. Soon there came an insistent demand for greater food production and the College of Agriculture, thru its extension service, found itself charged with carrying on the work in food production and food conservation. County agents, supported by government aid, were placed in nearly all important farming counties of the state.

Those who had been compelled to take military drill during two years of their college course now found that instruction of practical benefit. The service flag of the College of Agriculture, embracing both school and college, carried 550 stars, representing students, members of the faculty, and alumni serving in the Army, Navy, Marine Corps or Red Cross. General John J. Pershing, who had served in the early nineties as commandant at the University, was placed in charge of the American Expeditionary Forces. Chancellor Samuel Avery of the University became a major in the Chemical Warfare Service. Prof. L. W. Chase of the department of agricultural engineering became a major in the Ordnance Department. Dean E. A. Burnett of the college was called to Europe early in 1919 for service in the Army Overseas Educational Commission at Beaune University. The University of Nebraska stood fourth among all universities in percentage of enlistments among the student body.

A sad feature naturally was the number of young men who gave their lives in defense of their country. Those known to have died in service included:

COLLEGE OF AGRICULTURE

Roy B. Berryman, Ex-'21.....Central City
Frank Colcord, Faculty.....
Earl Forbes, B.Sc. '18.....Fairmont
Harold Kelley, Ex-'18.....Omaha
Edward H. Larson, Ex-'20.....Genoa
Taylor E. Lewis, Ex-'19.....Superior
Ivanhoe K. Metz, B.Sc. '17.....Quakertown, Pa.
Ralph F. Perso, Ex-'20.....Dalton
Marvin Race, Ex-'22.....Indianapolis, Ind.
Frank B. Sloan, Ex-'15.....Geneva
Edward W. Stirk, Ex-'22.....Norfolk
Harvey E. Vasey, B.Sc. '13.....Fort Collins, Colo.
Floyd Wambeam, Faculty .....
Charles R. Wright, Ex-'19.....Scottsbluff

SCHOOL OF AGRICULTURE

Walter Hager .....Lincoln
Thomas Benham, '14.....Lincoln
Bryan Berryhill, '15.....Gresham
Norris Burford, Ex-'19.....Lincoln
Reuben Larson, Ex-'19.....Aurora
Arthur Moseman, '16 .....Emerson
W. O. Schoenbeck, '10.....Odell
August Sudbeck, '15.....Hartington
Dean C. Walker, '14.....Dunbar
Raymond White, Ex-'17 .....Lincoln
Lemuel Wilcox, '14.....Polk
Robert Williams, '10.....University Place

The first effect of the War on the University and college was a decrease in attendance. But soon the University, at the request of the government, began to train hundreds of men in vocational work and in the Students' Army Training Corps. Barracks were erected at the Agricultural College and practical courses were given there in tractors, wheelwrighting, and automobiles.

A reflection of this war work is to be found even now, in 1923, in the University's Trades School and in the num-

ber of veterans taking vocational training. The Legislature of 1921 appropriated $75,000 which went to equipping the shops for the trades school. The government paid the tuition of the men taking the work, besides giving them regular compensation for living expenses. The Trades School has been in charge of Prof. E. E. Brackett, who for several years has been connected with the department of agricultural engineering.

The Trades School offered instruction in printing, mechanical dentistry, practical machine shop work, plumbing, electrical work, poultry husbandry, automobile mechanics, and cabinet making. Only the courses in poultry husbandry, automobile mechanics, and cabinet making were offered at the agricultural campus. In July, 1922, there were eight men taking automobile mechanics, ten cabinet making, and thirty-eight poultry raising. In all the courses taken together, including those given on the city campus, there were then over one hundred men enrolled. The total enrollment at one time reached more than 135.

With the division of the Industrial College into a College of Engineering and a College of Agriculture in 1909, Dean E. A. Burnett, who had been associate dean of the Industrial College in charge of agriculture, became dean of the College of Agriculture. Dr. Samuel Avery was acting chancellor of the University in 1908-09 and became chancellor on May 20, 1909. Both Chancellor Avery and Dean Burnett have remained with the University and it has been largely due to their efforts that the Agricultural College has developed to its present strength.

DEVELOPMENT OF COLLEGE WORK

During the few years following the establishment of the College of Agriculture as a unit by itself, enrollment in the agricultural courses picked up rapidly. In two years the college enrollment doubled and in four years it tripled. In 1909-10 there were only 116 men and 49 women enrolled;

in 1911-12 there were 208 men and 124 women; in 1913-14 there were 267 men and 201 women. By 1916-17 the enrollment reached its peak, in that school year 310 men and 282 women, or 592 all told, being registered in the College of Agriculture. Home economics was showing a splendid development, the great increase in number of women, from 49 in 1909-10 to 282 in 1916-17, being evidence of the increasing popularity of that subject. These figures of course did not include the enrollment in the School of Agriculture.

The World War caused many students to drop their studies in order to enlist, while others were obliged to stay home and help with the crops. The total attendance in the college dropped from 592 in 1916-17 to 474 in 1917-18. There were 447 enrolled in 1918-19, 542 in 1919-20, 488 in 1920-21, 507 in 1921-22, 558 in 1922-23, and 565 in 1923-24. The falling off in 1920-21 was undoubtedly due to the money stringency prevailing on Nebraska farms.

The faculty had grown as much in these years as the student body. There were approximately fifty persons listed on the roster of the faculty of the College of Agriculture in the catalog published in 1910. By 1923 this number had grown to approximately 115. Of course it must be understood that in both cases the names of members of the school faculty, experimental workers, and others who were not engaged in teaching in the college are included, but these figures serve well for comparison. About seventy of those listed in the catalog for 1923 engaged in actual teaching of agricultural and home economics subjects in the college.

Under the reorganization of the College of Agriculture in 1909 there were three groups of courses offered. There was one group in agriculture, one group in home economics, and one group in forestry. Forestry, until the work was abolished in 1915, was recognized as one of the departments of the College of Agriculture, altho most of the instructional work was given on the city campus. In the catalog

published in 1913 there was announced for the first time an agricultural practice group. The other agricultural group was now known as the agricultural science group. The practice group aimed to meet "the needs of those students who come to the college for one or two years with expectation of returning to the farm at the expiration of that time and who wish to get a large amount of agriculture in the early part of the course." Four years' work was outlined in the practice group, however, perhaps with the idea that those deciding to remain in college the entire four years could go right ahead with their work.

The catalog published in 1915 announced a general agricultural group in place of the agricultural science group, an agricultural practice group, and a home economics group. The forestry group had now disappeared. The practice group was announced as a two-year course. The student who desired to go ahead with the work after two years would be obliged to enter the general agricultural group and complete the science requirements. *Agriculture* for February, 1915, tells something of these changes:

"The Agricultural Science Group has been abolished and a General Agricultural Group has been established in its place, in which the two years of the course are prescribed and the last two years are largely elective. The student coming to the Agricultural College next fall will be able to get one-half his subjects in agriculture in the General Agricultural Group, the rest of the time being devoted to the sciences of chemistry, botany, entomology, and zoology and to the English language. In the second year, the sciences which were taken up in the first year will be continued and other agricultural subjects will be substituted until the student has had at least one course in each of the eight principal departments of agriculture in the college.

"Beginning with his Junior year, the student will select a major subject in which he wishes to become specially proficient and will spend a portion of his time during the next two years in this subject.

. . .

"Beginning next September, the student who wishes to take all of his agricultural course at the University Farm will be able to do so, as the Regents have agreed to offer a sufficient number of academic

courses at the Farm to fill the requirements for graduation. On the other hand, those students who desire may take their general science and their academic studies at the city campus.

"The Faculty of the College of Agriculture have also reorganized the Agricultural Practice Group to make it cover only two years of time instead of four years as was formerly the case. They have cut out all science requirements in this two-year group, and will permit the student to devote all of his time to the study of agricultural subjects. Upon the completion of the work offered, a certificate of proficiency in farm practice will be given to those students who have come from the farm and are experienced in practical farm work. Students coming from the city can secure this certificate only upon completion of a specified amount of practice on farms.

"It is expected that the two-year Agricultural Practice Group will make it unnecessary for any student with four years of high school credit to enter the School of Agriculture in order to secure the largest amount of agriculture in the shortest possible time. This group is sure to meet the needs of a large number of young men who have not previously entered the College of Agriculture because of the time which would have been required in the study of other subjects before taking up agricultural work."

In the catalog published in 1920 a two-year group in co-operative business was announced. This group is especially for mature men who wish training in the management of co-operative enterprises but who can spend only two years in college. It embraces a large amount of work in rural economics.

The catalog for 1921 announced a reorganization of the agricultural courses. Each student today is obliged to elect a certain group of studies, in most cases beginning with the second year. There is now one group in vocational education, one group in animal husbandry, one group in dairy husbandry, one group in farm mechanics, one group in plant industry, one group in rural economics, and one group in poultry husbandry. The work in all the courses is the same for the first year, thereby giving a student a year in which to pick out his subject of major interest. This first year embraces botany, chemistry, English, animal husbandry, agricultural engineering, horticulture, dairy husbandry, and military science, giving the young

man a fairly broad outlook before he begins to specialize. The two-year agricultural practice course and the two-year course in co-operative business are still offered, but have never attracted many students.

The work in home economics was also subdivided in the same way as the work in agriculture. There is now one group known as the basic curriculum for professional home economics, another group specializing in home economics education, another group in institutional management, and still another group for those young women who expect to go into agricultural extension work. In 1922 a two-year course in home economics was announced. At the completion of this course, the student is recommended to the State Department of Public Instruction for a certificate entitling the holder to teach home economics in the grades and junior high schools. The department of home economics now maintains a practice house where students live and receive practical instruction in keeping up a home during part of their school course.

At the time of the reorganization of the Industrial College in 1909, most of the agricultural departments had already been established in the preceding years and now it was only necessary to go ahead and develop the work under way. It will be recalled that in 1909 the department of agronomy and farm management was created, which included all the work given in crops, soils and farm management. But in 1911 it was reorganized. Prof. C. W. Pugsley took charge of the work in agricultural extension and also retained charge of the work in farm management. How this was worked out is made plain in the catalog published in 1912. There was agronomy, now listed by itself, with a division or section known as experimental agronomy, and a department of farm management. The course known as agricultural economics which had been given originally by Professor Davisson of the School of Agriculture under the general head of agricultural education had now disappeared. Prof. P. B. Barker was now the ranking professor

in the general work in agronomy. Prof. E. G. Montgomery resigned from the work in experimental agronomy in January, 1912, to take a position at Cornell University, and Prof. T. A. Kiesselbach succeeded him. The department of farm management was carried on by Prof. C. W. Pugsley and Prof. H. C. Filley, who in 1914 became head of the department. It is unnecessary to discuss here the work in agricultural extension carried on by Mr. Pugsley, for that is taken up at length elsewhere. In 1916 Prof. W. W. Burr became head of the department of agronomy. Mr. Burr had had wide experience in carrying on farming experiments for the United States Department of Agriculture in the Great Plains states. Farm management appeared for the first time as rural economics in the catalog published in 1919. The work had now begun to broaden out with courses in rural sociology as well as in farm organization, farm accounting, marketing, and rural economics. Professor Filley has remained in charge of this department to the present day.

Poultry husbandry was one of the new lines of work taken up in these later years. Practically every farm raised some chickens, but heretofore there had been little emphasis placed on the scientific aspects of the subject. The first courses in poultry husbandry were listed in the catalog published in 1916. There were just four courses, including elementary poultry management (two courses), poultry practice, and incubation and brooding, all of them listed under animal husbandry. They were given by Prof. M. E. Dickson who had joined the faculty of the college in 1915. Prof. F. E. Mussehl became professor of poultry husbandry in 1917, succeeding Professor Dickson. Poultry husbandry was listed for the first time as a separate department in the catalog published in 1922.

Agricultural education, or the preparation of young men and women to teach agriculture and home economics in the high schools of the state, had received some attention for several years as a collegiate course. It will be recalled that

such a course had been given by Professor Davisson of the School of Agriculture. This course was continued by his successors, Prof. Fred M. Hunter and Prof. H. E. Bradford. An impetus was given to this work in 1913, when the Legislature passed the Shumway Act providing state aid for high schools teaching agriculture, manual training, and home economics. But the great incentive came when Congress in 1917 passed the Smith-Hughes Act, providing federal aid.

In the catalog published in 1918, two courses in agricultural education were offered, one the history of vocational education, and the other agricultural education. The next year there were four courses, vocational education, organization and administration of agricultural education, method of agricultural teaching, and supervised teaching. In 1920 the work was known as agricultural and home economics education, instruction in teaching home economics having been added. By 1922 the work in this department had grown to eleven courses. In 1922 the name of the department was changed to vocational education.

The department of forestry which had been under the College of Agriculture since its reorganization in 1909 was abolished in 1915. Nebraska had no virgin forests of consequence and there were not the same opportunities for development as prevailed in states like Colorado. Prof. W. J. Morrill, who had succeeded Prof. F. J. Phillips after his death in 1911, had received a call to the Colorado Agricultural College. It must not be thought that this department did not serve a useful purpose in Nebraska. The fact that Nebraska was a treeless state gave this department a fruitful opportunity to urge the planting of trees in the western part of the state, but in deciding to stress those lines of agriculture of greater commercial importance to Nebraska, the education of trained foresters was left to other states.

It is hardly possible to enumerate all the changes that took place during these years, either in the departments or

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in the personnel. An agricultural editor was first employed by the college in 1914 to carry on editorial and publicity work. Frank C. Dean first served in this capacity. He was succeeded by Prof. Floyd Wambeam in 1916, in 1918 Prof. C. A. Lewis took up the work, and in 1922 this work was for the second time placed in charge of the author of this history. Agricultural journalism is now taught in the College of Agriculture. For several years a course was offered by the extension service for the benefit of those students who planned on going into agricultural extension work upon graduation.

Prof. F. J. Alway, professor of agricultural chemistry, resigned in 1913, being succeeded by Prof. F. W. Upson. Agricultural botany had become plant pathology and physiology by 1917. Prof. E. Mead Wilcox resigned April 1, 1920. He was succeeded a few months later by Prof. G. L. Peltier. Both of these departments, as far as the instructional work is concerned, are now under the direction of the departments in the Arts College. Professor Upson is now chairman of the department of chemistry in the University. Prof. J. W. Calvin, who resigned September 1, 1920, and Prof. M. J. Blish, the present chemist, have carried on the work for the experiment station. The station chemist and station plant pathologist are in charge of their respective lines of work in the Agricultural College.

Prof. A. L. Haecker, for fifteen years connected with the dairy department, resigned in 1911. Prof. J. H. Frandsen succeeded him. He resigned December 1, 1920, and was succeeded by Prof. H. P. Davis in 1921.

Prof. H. R. Smith, for eleven years a professor of animal husbandry, resigned February 1, 1912, to go to the College of Agriculture of the University of Minnesota. Later he became livestock commissioner of the Chicago Livestock Exchange. He was succeeded by Prof. Ralph K. Bliss of the Iowa State College. In 1914 Professor Bliss returned to the Iowa State College, and Prof. H. J. Gramlich, who had grown up in the department, became its head.

Dr. L. Van Es was called from the North Dakota Agricultural College in 1918 to take charge of the department of animal pathology and hygiene. Dr. J. H. Gain, who had long been associated with the college in that work, resigned in 1920.

In the department of horticulture Prof. R. A. Emerson resigned in 1914 to take a position as head of the department of plant breeding at Cornell University, later to become dean of the graduate college there. Prof. R. F. Howard was then selected as head. He resigned to take effect in 1924 in order to devote himself to active farming operations in Texas. Prof. C. C. Wiggans was appointed his successor.

There were a number of changes in the department of home economics. Miss Rosa Bouton, who had established the work back in the nineties, was succeeded by Miss Alice M. Loomis in 1913. Miss Julia M. Vance was acting head of the department in 1917 and Miss Margaret Fedde became chairman (heads of departments had now become known as chairmen) of the department in 1919.

Prof. O. W. Sjogren became chairman of the department of agricultural engineering in 1920 when Prof. L. W. Chase resigned to enter commercial work. Professor Chase had been largely responsible for the great development of agricultural engineering during this period.

In the department of entomology Prof. M. H. Swenk became chairman in 1919. Professor Bruner, who has given more than a quarter of a century to the service of the institution, is still associated with the department, altho he has been relieved from the more arduous duties in connection with it. The name of Professor Bruner is one of the best known among those who gave their services to the agricultural work of the institution during the nineties and early 1900's. Professor Bruner was chosen to represent the State of Nebraska at the San Francisco Exposition as the state's most distinguished citizen.

Toward the close of this period the College of Agriculture began to offer students all the advantages of a small

college coupled with those of a big University. Students had the advantage of intimate association with fellow students on the college's own campus, and at the same time they could take part in all University affairs, and be a part of the larger University. A better student spirit developed. Departmental clubs and organizations began to be formed. In 1916 the first Farmers' Fair was held, consisting of a parade and a day's entertainment on the college campus. Toward the close of this period there was a concerted effort to have the farm designated as "Agricultural College." For several years it had been known as "State Farm" and later as "University Farm," but the new name best indicated its real purpose.

THE SCHOOLS OF AGRICULTURE

It is now possible to speak of "schools of agriculture" instead of "school of agriculture," for the Legislature in 1911 provided for another secondary school, to be located in southwestern Nebraska. It was to do for the western farm boy and girl what the school in Lincoln had been doing for the boys and girls of the state in general. An appropriation of $100,000 was made by the Legislature, and the Board of Public Lands and Buildings was authorized to pick out the site and arrange for the building.

The Nebraska School of Agriculture, as it was called, was located at Curtis in Frontier County. A substantial brick building, besides other necessary structures, was erected, and the school opened to students in September, 1913. Its enrollment in 1913-14 was 121, including 56 men and 65 women. The next year the enrollment was 199, and for the succeeding years, 193, 161, 141, 143, 175, 172, 197, and for 1922-23, 230. A remarkable feature of this school has been the large number of women in attendance. In 1922-23, for instance, there were 120 women and 110 men.

Besides a regular eight months' course, the school offers a special two months' term after the holidays each year for the man or boy who must stay on the farm most of the

year, and a summer session affording eight weeks' training and instruction for rural teachers. Primarily the school aims to fit young people for a successful life in the open country. It offers all the courses of the ordinary high school and in addition the industrial and agricultural subjects, such as wood work, soils, stock judging, forge work, farm machinery, and the like, for the boys, and sewing, cooking, art and decoration, home nursing, and similar subjects for girls. In addition, there is special work for those who desire to prepare to teach, as well as for those who desire to enter the University of Nebraska on completion of the course.

The school maintains a demonstration farm of 475 acres for working out the practical farming problems of that section of the state. The buildings now include, besides the main building, a superintendent's residence, a gymnasium, a building for agricultural engineering, residences for the engineer and foreman, as well as the necessary barns and sheds.

Cyrus V. Williams was the first superintendent of the Curtis School. He was succeeded about 1918 by Allan P. Davidson. Charles K. Morse has been superintendent since 1919.

The School of Agriculture at Lincoln continued to hold its own. But it may possibly be said that just as this school overshadowed the agricultural courses of the Industrial College in the early 1900's, so today the College of Agriculture overshadows the school. But had it not been for the school, probably it would have been many years before the college farm attained its present-day development. That the school has held its own in the face of the development of agricultural and home economics instruction in the high schools of the state, as well as the development of more four-year high schools, is encouraging.

The attendance in the school for 1910-11 was 602, and for the successive years 574, 661, 688, 618, 623, 632, 526, 793, 895, 686, and 589. The numbers registered in the

regular full-year course beginning with 1916-17 were for the respective years 475, 361, 319, 461, 348, 266, and 173. The number of women in attendance upon the regular course has seldom been much more than one-third the number of men, except in the War years. The attendance in the full-year course suffered during the War years as it did in the recent financial depression. The total number of graduates of the school is today in the neighborhood of 1,000.

The catalog of the School of Agriculture, published in 1910, announced a four years' course in place of a three years' course of instruction. *Agriculture* in February, 1912, announced a number of changes in the course offered in the School of Agriculture. "Beginning with the next school year, normal training will be added to the course of study in the School of Agriculture," said this announcement. "The course as a whole has been revised and the work of the senior year of the four years' course will hereafter consist of three groups, the Technical, the University Preparatory, and the Normal Training." The University preparatory course was for those who expected to enter the state university, the technical course for those who planned to go back on the farm at the completion of their work, and the normal training group for those who planned to teach in the rural and village schools. This plan of work has been largely followed to the present day.

In addition to the four-year agricultural and home economics courses, there have been from year to year special short courses dealing with such subjects as general agriculture, farm motors, farm tractors, buttermaking, animal pathology, and poultry; in fact, any subject for which there seems to be a special demand may be offered. These winter courses, which last from one week to about one month, are of particular value to mature men, who can get away from the farm for only a short time each winter.

Prof. A. E. Davisson, the first principal of the School of Agriculture, died in 1911. He was succeeded by Prof. Fred

M. Hunter, who later was to have a successful public school career, serving as superintendent of the schools of Lincoln, Neb., and Oakland, Cal., and becoming president of the National Education Association. Prof. Harry E. Bradford became principal of the school in 1912, and has since remained in charge. Miss Mary Virginia Zimmer is assistant principal of the school, succeeding Miss Julia Loughridge in this capacity in 1917.

The Legislature in 1917 provided for the establishment of a School of Irrigation in Scotts Bluff County. The site for the school was located near Scottsbluff and in 1919 an appropriation of $60,000 for improvements and maintenance was made. This school was under the College of Engineering and so we are concerned with it only in passing here. The school had an attendance of twenty-three students in 1920-21 and fourteen in 1921-22. It has now been abolished.

AGRICULTURAL EXTENSION

Perhaps the outstanding development in connection with the College of Agriculture during the last twelve years was the marked growth of agricultural extension, with its extension schools, county agents, home demonstration agents, boys' and girls' club work, a press service, county fair exhibits, extension bulletins and circulars, and other forms of activity. The passage of the Smith-Lever Act in 1914 furnishing federal aid for this work as had been done for the general work of the college and the experiment station marked the beginning of extension work on a really ambitious and comprehensive scale. Then came the World War and for a year or so the Agricultural Extension Service with its plans for food conservation and increased production thruout the state found itself perhaps the most important line of work in the College.

We have already learned of the great development of farmers' institutes, but this was a case where the child outgrew the parent. The farmers' institute was the father

of the extension work, but it was only a comparatively few years before the other lines of agricultural extension had completely swallowed up the old-time institute.

The climax of the farmers' institute movement was reached in the year ending June 30, 1913, when 224 institutes were held. Then came a gradual decline. For the full year 1914 (reports were now made by the calendar year) there were 186 institutes and also 20 short courses, for 1915 153 institutes, and for 1916 121 institutes. In 1916 there were fifteen short courses. In the annual report of the extension service for the year ending June 30, 1918 (this report apparently was brought to a close at that time), there is this statement:

"Farmers' Institutes have gradually been discontinued in Nebraska and in their place has been substituted the work of the Farm Bureau with its special meetings and definite program of work. Four days' short courses in agriculture and home economics are frequently conducted. A few institutes still survive in some parts of the state, but these are being encouraged to affiliate with the Farm Bureau and to turn their program into its program."

The passing of the farmers' institute was marked by the development of the county agent and farm bureau movement. Even the short course, or institute lasting several days and conducted in the nature of a school, was finally merged into the work of the county farm bureau, with practical demonstrations carried on in every section of the county. Instead of a state-wide unit, there was a tendency in later years to develop a county unit.

As in the case of the development of most special lines of activity, there was one man who was particularly responsible for the great development of agricultural extension in Nebraska. In 1911, Charles W. Pugsley, who had been associated with the department of agronomy, became superintendent of agricultural extension, at the same time retaining charge of farm management. In September of that year the name of the department having the extension work in charge was changed from farmers' institute department to agricultural extension department. In 1914

the name of the department was changed to Extension Service of the College of Agriculture and Mr. Pugsley became known as the director. In a comparatively few years this work had grown from a little office in Agricultural Hall to a department covering an entire floor. For about seven years Mr. Pugsley played an important part in the development of this work in Nebraska. He later was assistant secretary of the United States Department of Agriculture and now (1923) is president of the South Dakota Agricultural College.

For several years there had been employed in different sections of the United States what were known as farm demonstrators, or county agricultural agents. These men went about assisting the farmers in developing special lines of work, such as hog cholera eradication, cow testing, improved farm practices, in fact, anything that would make for better farming in the community. In the earlier days one man might cover several counties. These men were first supported by local appropriations, or in many cases by funds supplied by the General Education Board, by corporations, or by banks interested in the improvement of agriculture in certain sections.

The first county in Nebraska to employ such an agent was Merrick County. V. S. Culver began work there in 1912, without any special government or state aid, his support coming from private funds. The real beginning of the county agent movement in Nebraska, however, dates from the passage by the Nebraska Legislature in 1913 of a law, providing for the partial support of such agents by county funds. This law provided that upon a petition signed by at least 10 per cent of the farm land owners in any county in the state, the board might set aside from the county general fund a sum of money to employ or assist in employing such a farm demonstrator. The duties of the county agent were outlined as follows:

"The county farm demonstrator shall work under the direction of the agricultural extension department of the University of Nebraska.

It shall be his duty to co-operate in every way possible with the farmers of the county that the best farm practice for that county may be determined. He shall co-ordinate and apply the results of the work conducted by the United States Department of Agriculture, the various experiment stations and colleges of agriculture and especially the Nebraska Experiment Station and College of Agriculture and also such general studies and farm practices as may be made by him in the course of his work, with the view of carrying to the farmers of the county or community on their own farms, the most successful and productive methods in agriculture. He shall aid in the organization and direction of agriculture in the county where he is employed, and shall co-operate with agricultural clubs and other associations and organizations whose object is the betterment of rural conditions throughout the county. Each farm demonstrator shall devote his entire time to this work and shall be directly responsible to the party in charge of such work in the agricultural extension department of the University of Nebraska."

This law put official sanction on the work of the county agent in Nebraska. About this time other counties began to think about county agents. In 1912 and the early part of 1913 some organization work had been done in Seward and Gage Counties by representatives from the college at Lincoln. A. E. Anderson had been employed on November 1, 1912, to give attention to the organization of county farmers' organizations for the employment of farm demonstrators, or agents. On February 1, 1913, O. H. Liebers was employed as county agent in Gage County. On March 1, Mr. Anderson became county agent in Seward County, securing practical experience for his later work as state leader. On July 1, 1913, A. H. Beckhoff became county agent of Seward County, and Mr. Anderson returned to Lincoln to give his entire time to the extension work. On May 1, 1913, J. F. Coupe became county agent of Thurston County. So we have here the beginnings of the county agent work in four Nebraska counties, Merrick, Gage, Seward and Thurston. No more counties took up the work until 1914. In that year four more county agents began work: Val Kuska in Madison County on March 10, 1914; C. S. Hawk in Dawes County in the spring of 1914; George

O. Unruh in Kimball County on July 1, 1914; and Hugh Raymond in Dakota County in 1914.

By this time the Agricultural Extension Service of the University had begun to receive some money from the Federal government for carrying on its work. The report of Mr. Pugsley, director of the service, showed that there had been received from the United States Department of Agriculture $11,250 in 1914. Of this amount $8,100 went into county agent work, $1,900 into boys' and girls' club work, $500 into dairy work, and $750 into hog cholera work. That year $25,000 in state funds was also available.

But another thing happened about this time that completely changed the complexion of the extension work for all time. That was the passage of the Smith-Lever Act by Congress in 1914. This did for extension work what the Hatch and Adams Acts were doing for experimental work. The Smith-Lever Act stated "that co-operative agricultural extension work shall consist of the giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in said colleges in the several communities, and imparting to such persons information on said subjects through field demonstrations, publications, and otherwise; and this work shall be carried on in such manner as may be mutually agreed upon by the Secretary of Agriculture and the State Agricultural College or colleges receiving the benefits of this act."

This act appropriated $480,000 or $10,000 a year to each state which agreed to the provisions of the act. The act provided further "that there is also appropriated an additional sum of $600,000 for the fiscal year following that in which the foregoing appropriation first becomes available, and for each year thereafter for seven years a sum exceeding by $500,000 the sum appropriated for each preceding year, and for each year thereafter there is permanently appropriated for each year the sum of $4,100,000 in addition to the sum of $480,000 hereinbefore provided." None

of this additional money could be available until offset by a state or local appropriation. This extra money was to be distributed to the states "in the proportion which the rural population of each state bears to the total rural population of all the states as determined by the next preceding Federal census." Five thousand dollars of this Smith-Lever money became available to the Nebraska extension service on July 1, 1914. In 1915 the Nebraska Legislature accepted the provisions of the act.

We now have the general background to the extension movement of the last ten or twelve years, including the farmers' institute and the short course, the beginnings of county agent work in Nebraska, and the passage of the Smith-Lever Act by Congress. The extension work was now carried on not alone by the College of Agriculture, but with the active co-operation of the United States government. The assistance of various organizations was enlisted to get the work under way.

"The Extension Service is organized coordinate with the Experiment Station as a part of the College of Agriculture," the report for 1915 stated. "The service itself is divided into departments or divisions with an executive officer in charge of each. At present the divisions comprise the following: County Agents, Boys' and Girls' Clubs, Home Economics, Information Service, Movable Schools, and Special Meetings.

"The Extension Service bears the same relation to the College as does the Experiment Station, and the College is organized as a part of the University. A close co-operative relationship exists between the State Board of Agriculture, the State Horticultural Society, the State Department of Public Instruction, and other State departments and societies, not by law but by agreement. County Associations, known as County Farmers' Associations, taking part in the direction of the County Agent Work, cooperate with the Extension Service, and there are also local Farmers' Institute Associations and other local organizations which cooperate with the Service."

If one turns to the report of the extension service for 1914, one secures a good idea of just how the work was being developed. It might be said that 1914 was the first year in which the work was developed on a really substantial basis. Some twenty-five people were employed for full time, five for part time, and fifteen for special lecture work. This included of course the clerical force as well as those engaged in active outside work.

Mr. Pugsley was serving as director. A. E. Anderson was in charge of the farm demonstration work, or the county agents, as they began to be known a little later. Miss Huldah Peterson was in charge of boys' and girls' club work, Miss Mabel C. Daniels in charge of the home economics work, and Mrs. Emma Reed Davisson in charge of women's club work. An extension council composed of the heads of the various departments in the college was organized to co-operate in directing the work.

There was another development in the work of the extension service. It will be recalled that in the farmers' institute work, it was the custom to recruit a large number of lecturers, part of them from the college faculty and part from among the prominent farmers. Now there began to appear what were shortly to be known as extension specialists. Each man or woman was a specialist in some one line, such as agricultural engineering, or animal husbandry, or dairying, or some other line of farming or home demonstration. These specialists not only went out and filled the institute and short course engagements, but also co-operated with the county agents and carried on demonstrations in various parts of the state. Members of the college faculty in some cases were engaged to give a certain part of their time to extension work. Finally the practice of engaging outside speakers to travel over the state was gradually abandoned.

The demonstration was a favorite method of teaching. That is why the county agents were first known as farm demonstrators. The idea here was to carry on a practical

experiment on some farm and demonstrate, or show, to the rest of the farmers what might be accomplished if every farmer would do likewise. These demonstrations included the prevention of smut by the formaldehyde treatment of seed oats, the value of northern vs. home grown seed potatoes, the proper care of orchards, the vaccination of hogs for cholera, in short, the practical solution of those problems which seemed to be troubling the average farmer. An orchard demonstration in 1914 showed 84.69 per cent of sound fruit from apple trees that had been treated in the demonstration and 10.94 per cent from those that had not. The treatment of seed oats resulted in an increased yield of 250 bushels on twenty acres. Observation tours began to be held occasionally so that the farmers might visit other farms in the county and learn what was being accomplished.

The work in home economics was devoted principally to actual contact with women, either at farmers' institutes or short courses, or at special meetings thruout the state. There was a great deal of work carried on thru women's clubs. Such special subjects as canning, cookery demonstrations, and dressmaking began to be taken up.

The boys' and girls' club work was carried on by means of projects. The boy or girl who enrolled as a club member was supposed to carry out during a period of at least one year some project and then make a report. These projects included corn growing, potato growing, gardening and canning, and sewing and cooking. Later on these came to be broadened out into poultry clubs, pig clubs, calf clubs, and other more ambitious undertakings.

The extension service began to issue its own bulletins, while items of interest were sent to the various newspapers thruout the state, the agricultural editor of the college giving approximately half of his time to this work. Another feature was the special excursion trains now and then sent thru the state, such as a train promoting dairy work, or seed corn selection. Back in 1912 six special trains were run over nearly all the railroads in the state during the winter

months calling attention to the necessity of seed corn selection if the following year's crop was to be good. It was estimated that 52,000 farmers were reached on that circuit of meetings. There was also correspondence instruction in agriculture thru the University extension department downtown, which had been established a few years before. Exhibits for county fairs were prepared and sent out.

Up to the year 1917, preceding our entrance into the War, the extension work had grown rapidly. In 1916 the extension force consisted of thirty-nine persons employed full time and sixteen part time. That year the various meetings held by the extension service had a total attendance of 205,662. Nine counties, Box Butte, Dakota, Dawes, Kimball, Madison, Seward, Gage, Sheridan, and Thurston, had county agents. Miss Esther Warner in the fall of that year was employed as home demonstration agent in Seward County, the first "woman county agent" in Nebraska, to work especially among the women. Miss Maud Wilson had now succeeded Miss Daniels in charge of the home demonstration work in the state. In 1916 there were four home economics specialists, besides one who devoted her time to work among women's clubs. There were four workers devoting full time to work among the boys and girls. Specialists were now employed in agricultural engineering, animal husbandry, agronomy, dairying, farm management, and horticulture. In 1916 there was $72,645.80 in funds available for work in extension. This included $29,645.80 of Federal Smith-Lever funds, $25,000 of state funds by appropriation, and $18,000, representing contributions by the United States Department of Agriculture.

This was the setting, then, before the United States entered the World War. But soon the extension service was to find its activities being doubled, trebled, and even quadrupled, or better, in some cases. The biggest thing that happened at this time was the passage by Congress in 1917 of the bill for "Stimulating Agriculture and Facilitating the Distribution of Products." This supplied the State

of Nebraska with funds sufficient to place a county agent in nearly every important agricultural county in the state, as well as greatly increase the work for home demonstration and boys' and girls' clubs. There was also during this year more than $93,000 available in Federal Smith-Lever funds, state funds, and apportionments from the United States Department of Agriculture. In July of 1917 but nine county agents were at work. A year later there were fifty county agents, eleven district agents covering two or more counties, three assistant county agents, and ten on the administrative and supervisory force. Ten home demonstration agents at large were appointed. County agent work had come into its own in a way that would not have been thought possible a few years before. From time to time during the War there were special campaigns. At one time thirty-five young women were employed to do special work for a short time under the direction of county and district agricultural agents. There was a special campaign for increased hog production, carried on under direction from Washington.

The big idea was the oft-repeated saying that "Food Will Win the War." So the extension service set about during the war years to promote the growing, the distribution, and the preserving of foodstuffs. Scores of emergency and regular bulletins were issued, all carrying this same gospel in one form or another. When it was apparent that there would be a shortage of cans for canning food products, the extension service evolved a machine for drying fruits and vegetables. Five large machines for communities were put in use in the state. When a shortage of labor became apparent the extension service was instrumental in establishing labor bureaus to furnish men for gathering in the crops. The marketing work was greatly extended, all tending to eliminate as much waste as possible. When it was necessary to cut down on the amount of wheat flour and sugar, the extension service began to distribute recipes economizing on such food commodities. The boys and girls

were urged to greater production of vegetables for the family table. The first boys' and girls' club agent to devote his entire time to working among the young people of a county was J. Clarence Hagey, employed in Thayer County in 1917.

During these years there were a number of changes in the personnel of the extension service. C. W. Pugsley, under whose direction the organization had grown to a position of leadership in the state, resigned June 30, 1918, to become editor of The Nebraska Farmer. C. E. Gunnels, who had been called from the position of county agent in Seward County to become state leader of county agents on July 1, 1917, now became director of extension. R. E. Holland succeeded Mr. Gunnels as leader of county agents. Mr. Gunnels was called to a position in Washington, D. C., at the end of 1918, and a few months later he was succeeded by W. H. Brokaw, the present director. L. T. Skinner, who had been serving as assistant to the director since September, 1917, became secretary of the extension service on July 1, 1918.

C. W. Watson succeeded Mr. Skinner in charge of boys' and girls' club work, when the latter became assistant to the director of the extension service. Mr. Watson resigned in 1919 and was succeeded by L. I. Frisbie. In the home demonstration work Mrs. Emma R. Davisson succeeded Miss Wilson in 1918. Miss Stella Mather took up the work in 1920, resigned in 1923, and was succeeded by Miss Mary-Ellen Brown.

The extension service at the close of the War found it necessary to retrench in some of its lines of activity. The government's emergency funds ran out on June 30, 1919, and much of the special war-time work had to be given up. It must be remembered that the Smith-Lever funds were increasing each year, and to compensate for the sudden withdrawal of the emergency funds, some additional Smith-Lever money was made immediately available.

Another way in which the matter was taken care of was by the passage of county agent legislation in 1919. This compelled the county commissioners to make appropriations for this work whenever a sufficient number of farmers requested it. This law provided that whenever in a county not less than 300 farmers, or one-half the farmers in any county, petitioned the county board to appropriate a sum of money out of the county general fund, the board must do so. "Whenever the petitioners shall organize themselves into a society known as a Farm Bureau, and shall have been recognized by the Agricultural Extension Service, College of Agriculture, University of Nebraska, as the Farm Bureau of said county, they shall prepare a budget or estimate of the funds necessary for carrying on of such work within the county," the law stated. "Said budget shall be filed with the County Clerks, and as claims are approved by the Board of Directors of the Farm Bureau and filed with the County Clerk, the County Board shall order warrants to be drawn upon the general fund of said county in payment of such claims. The total amount so appropriated and paid out shall not exceed an amount equal to a one-mill levy on the assessed valuation of the property of the county, and in no instance more than five thousand dollars." [1]

The law provided that "the county agricultural agent shall aid in the organization and direction of agriculture in the county where he is employed and shall co-operate with individuals, agricultural clubs, and other associations and organizations, whose object is the betterment of rural conditions throughout the county."

This law was upheld by the courts, but another complication arose. About this time the American Farm Bureau Federation and the Nebraska Farm Bureau Federation

[1] The above law was again modified in the Legislative session of 1923, providing for petitions in proportion to the population of the county. The maximum appropriation of a county was reduced at this time to $3,500. This law also provided that when remonstrance petitions containing the names of one-eighth more farmers than the original petitions were presented, the matter should be decided at the next general election.

began to organize. Had the officers of the College not foreseen the possibility of a conflict between the farm bureau as a public service organization supported by the taxpayers and the farm bureau as a class organization, or society, there might have been severe criticism. The county agents of course were paid from public money and so were supposed to serve every agricultural interest in the county and not any special organization.

Mr. Brokaw, the director of the extension service, pointed out very definitely the work of the county agent in an address delivered at the meetings of Organized Agriculture in 1922. He made clear the following four points:

"1. That the County Extension Agent (or County Agricultural Agent) is supported by public funds, is really a member of the agricultural college staff, and in that degree is a public official.

"2. That this Extension Agent, being a public service official, may not solicit membership for any class organization nor favor in any way one class organization above another.

"3. That the agency within the County which cooperates in directing his efforts is known as a County Farm Bureau and is a public service organization.

"4. That the County Extension Agent as a factor in the advancement of our basic industry in each county, as a member of the agricultural college staff, and as a representative of the federal department of agriculture, must be supported by public funds."

The new farm bureau law providing for county appropriations had done much to make up for the loss of the emergency appropriations. At the end of 1921 there were forty-six organized counties in the state employing county agricultural agents. Eleven of these counties employed two agents. There was in these later years an increasing development of the county unit plan in carrying on extension work almost entirely thru the county agent. Community programs of work were emphasized. Such work as the securing of harvest labor, seed certification, purebred sires, insect and rodent extermination, orchard renovation, better seed potatoes, was promoted. In fact, the modern day county agricultural agent aims to have several special

lines of work under way in his county, as well as offering every farmer such assistance in the solution of special problems as he may desire.

Along the line of home demonstration, there was work in clothing, foods and nutrition, home health and hygiene, home management, home millinery, and the like. Boys' and girls' clubs now included projects embracing wheat, corn, potatoes, garden, pig, sow and litter, dairy calf, cow and calf, beef calf, sheep, poultry, canning, cooking, clothing, and hot lunch. How much the extension service had grown is evident from the fact that its total expenditures for the year ending June 30, 1921, from federal appropriations, state appropriations, and county appropriations amounted to $342,359.57.

THE EXPERIMENT STATION

The marked feature of the work in the Agricultural Experiment Station was the fuller development of the lines of work which had been started during the late nineties and early 1900's. These later years were years of greater intensity, with a better perception of the problems that needed solution. There was now an adequate staff of workers representing practically every branch of agriculture, and one man no longer had to be depended upon to handle everything from teaching to research in several branches and subdivisions of those branches. In addition to the appropriations from the Federal Government in the Hatch and Adams Acts, the experiment station now and then received a substantial appropriation at the hands of the Legislature for general research or for putting into execution some special branch of research.

We have already learned of the North Platte Substation, established in 1903, but now there came a demand for similar stations in other sections of the state. In less than ten years, the Valentine and Scottsbluff substations were established, an experimental fruit farm was started near Union, and additional land for the experiment station at

Lincoln was purchased, not to mention the Culbertson substation which was established at the town of that name in southwestern Nebraska, and later given up. The agronomy farm was added to the central station in 1918.

It is perhaps not an easy matter to pick out all the important work in an experimental way which has been carried on during the last ten or twelve years. Much of the work started during these years is still under way and yet to be reported upon. Experimental work at best is a slow process and especially in the case of observing and developing plants, it often takes several years.

In conjunction with the substations more and more attention had been paid to the problems of the western Nebraska farmer. Here there was investigation as to the possibilities and limitations of cultural practices in overcoming drought. Three outstanding things were here determined: (1) the proper cultivation of the soil to conserve moisture; (2) varieties of crops adapted to the conditions; and (3) the proper rates of seeding. The North Platte substation became a recognized leader in dry land investigations.

In the department of agronomy there was the development of Nebraska No. 60 wheat, which it might be said is the rival of the Kanred wheat from Kansas — only Nebraska did not give its wheat a distinctive name. Today there is the great development of sweet clover thruout Nebraska. Not so many years ago sweet clover was thought to be a weed, but today it promises to be a crop as valuable to the raiser of livestock and the general farmer, as alfalfa hay is to the feeder. Nebraska of course cannot compete with the East in bluegrass pastures, but here is a pasture crop that will maintain three times as many animals per acre.

In horticulture one of the biggest accomplishments of recent years was carried out. For many years the majority of farmers in northwest Nebraska were under the impression that they should import their seed potatoes. But the college proved to them not only that this was unneces-

sary but that they could grow seed potatoes themselves which would actually eclipse those grown in some of the best seed-producing states. The college developed the growing of certified seed potatoes for the southern market, and the grower in northwest Nebraska who takes extra care and has his potatoes certified can receive 50 to 75 cents a hundredweight extra for his crop. Over in the irrigated districts the college proved to growers that irrigated seed generally runs out, and in many cases after a few generations is worthless. This has been demonstrated to be due to a disease — spindle tuber. It was suggested that these growers could buy dry land seed from their neighbors a short distance away. Even on a poor market, 1923, those who applied these two ideas made over $100,000 clear profit over what they could have done had they followed their old plans. Of course it must be understood that many accomplishments such as this are carried on in co-operation with the Agricultural Extension Service.

Then there is the work in agricultural engineering. With the erection of the new building for agricultural engineering, equipment for testing agricultural implements was installed. The piece of work of the most original and far-reaching character has been the testing of tractors. The Legislature in 1919 passed a law compelling manufacturers of tractors sold in the state to have them tested by the college to see if they measured up to the specifications as given in the companies' advertisements. A special track was constructed for this work and a small building erected to carry on some of the special tests. It is interesting to note that as a result of the testing of sixty-eight tractors in 1920, manufacturers of six tractors increased their engine speed, manufacturers of eleven lowered their horsepower rating, eleven made changes in their equipment, and three withdrew from the tests. A great deal has been accomplished in co-operation with the Agricultural Extension Service in solving practical problems, such as drainage and prevention of soil erosion on the average farm.

For the first time, perhaps, people began to think seriously about system on the farm. The department of farm management, later rural economics, found a fruitful field for labor here. Farming was no longer a hit-or-miss proposition, but a business that demanded as careful study as any other business. So the college has begun experiments to find out why farmers do not make money, and to develop scientific plans of handling individual crops and farms to make as substantial profits as possible.

Probably the outstanding result of the experimental feeding work with animals during this period was the renewed emphasis placed on the use of corn and alfalfa as the ideal fattening ration. The "fancy" feeds, as well as the substitution of millet, timothy, and prairie hay for alfalfa, did not give as good results. It was found that in fattening lambs four pounds of corn and three pounds of alfalfa were necessary to produce one pound of gain, in fattening calves from five to six pounds of corn and two pounds of alfalfa, in fattening two and three-year-old steers eight pounds of corn and five pounds of alfalfa, while in fattening pigs, five pounds of corn and one pound of alfalfa were necessary to produce one pound of gain. The work has tended to show that in the case of calves, lambs, and pigs about ten pounds of gain may be secured from one bushel of corn.

Another important fact may be deduced from the figures given above. Calves make as much gain on 60 pounds of feed as older cattle do on 100 pounds. This fact lies at the foundation of the "baby beef" work. The corn belt feeder will do well to feed more calves, thereby producing greater gains at less cost. Western stock raisers may well afford to raise more calves to turn over for fattening to the corn belt feeder. The markets have shown an increasing demand for young beef.

The dairy work of the college prospered greatly during these years, added impetus being given by the erection of the new dairy building in 1916-17. In 1923 the college had

approximately forty-two cows in milk of all breeds with an average production per cow of about 12,134 pounds of milk, 494 pounds of fat, or 617 pounds of butter. Nebraska's great record has been made with Holsteins. Figures compiled a year before and published in the Journal of Dairy Science showed Nebraska holding first place among mature Holsteins, second place among the junior four-year-olds, second place among the senior three-year-olds, fifth place in the junior three-year-old class, fourth place in the senior two-year-old class, and second place in the junior two-year-old class. This was out of a total of twenty-four colleges and universities. On the honor roll of the Holstein-Friesian Association for 1922-23, the herd of the Agricultural College stood at the top among all the agricultural colleges of the country.

The foundation of the dairy department went back to two cows, Karen II, mother of Katy Gerben, and La May, the mother of La Verna Lincoln. Neither of these cows cost more than $50. Karen II was purchased by Prof. A. L. Haecker, of whom we have previously read, in the late nineties. Katy Gerben, her offspring, was to have a remarkable influence in Holstein history. At two years of age Katy produced 338 pounds of butterfat, and the next year broke the World's record as a three-year-old, producing 18,573 pounds of milk and 620 pounds of fat. During her twenty years of service to the institution Katy gave birth to fourteen calves, of which nine were bulls and five heifers. She outlived all of her daughters except one. During fourteen lactation periods she produced 166,456 pounds of milk, this despite the fact that during later years the front quarters of her udder gave no milk.

Kittie Gerben Lincoln was Katy's outstanding daughter, as far as perpetuating the family line. Kittie gave birth to a son, King Derby Lincoln, who has nine high-producing daughters and eight granddaughters in the herd. His nine daughters averaged, at four years, five months of age, 710 pounds of fat. There are forty-two descendants of Katy Gerben in the University herd.

La May, the other famous cow, was purchased in 1909 with a lot of run-down cattle, the entire herd being bought for $38 a head. The daughter of La May was La Verna Lincoln, who brought to the University of Nebraska at one time the distinction of being the only college which had bred, raised, and owned a cow producing more than 1,000 pounds of butterfat in a year.

Then there was the manufacture and distribution of hog cholera serum, carried on by the College of Agriculture. In 1911 the Legislature established a plant for the production and distribution of hog cholera serum under the direction of the regents of the University. The Legislature of 1917 discontinued the appropriation, but the Legislature of 1919 provided funds to reopen the plant. Today most of the serum is purchased and tested by the station and then shipped out to the farmers.

The work in the investigation of animal diseases, which was such a prolific source of inquiry and almost the first important investigational work carried on by the college, was resumed a few years ago. The new laboratory provided for animal pathology makes possible such work on an ambitious scale.

For the first time the college was now able to pay some attention to the scientific aspects of poultry raising, with the establishment of an adequate poultry plant. Nearly every farmer raised some poultry, but there was always much to be desired in the way of investigation and extension work along this line. A great deal has been accomplished in co-operation with agricultural extension in developing, on the average farm, high-producing flocks of poultry.

It would be quite possible to enumerate many other lines of work that the College has under way. There are always plenty of practical experiments, in which immediate results may be looked for. Then there are many of a highly scientific character, such as those carried on in animal pathology. The man who writes the next ten years of this

history will doubtless be able to recount the results achieved in the various undertakings going on at the present time.

NEW SUBSTATIONS

From the passage of the Kinkaid Act in 1904, and in fact, during practically the entire first decade of the 1900's, there had been a steady influx of settlers into western Nebraska. The homestead lands began to be picked over, and soon the western half of the state was dotted with sod houses of the homesteaders. The land north of the Platte began to be settled. Irrigation played an increasingly important part in the North Platte Valley, and in other sections of western Nebraska. With the advent of the homesteader with his small farm or ranch, seldom over 640 acres, there came a demand for information as to how to make a living. Western Nebraska was now face to face with the problem of making the small farm or ranch pay its way. The sand hills were unusually important of course, covering some 20,000 square miles, or about one-fourth the area of the state.

"The obvious usefulness of the North Platte Station no doubt lies at the basis of the call for a similar enterprise in another but a very different section of the state, the so-called Sand Hills region," the regents' report for the two years ending in 1908 stated. "The station at Lincoln practically covers the ground for the eastern and central parts of the state, that is to say, for the glaciated portion and for the loess plains. The substation at North Platte does the work for the elevated plateau. The sand hills naturally come next. Their agricultural and stock-raising possibilities are thru under-development vastly underestimated."

The Legislature in 1909 made provision for two substations. One bill, passed by the Legislature, provided "that for the furtherance and promotion of agricultural, horticultural, forestry, and livestock interests of this state,

an experimental sub-station shall be established north of the sixth standard parallel and west of the second guide meridian in the State of Nebraska, including the counties of Sioux, Dawes, Box Butte, Sheridan, Cherry, Keya Paha, Brown, and Rock, which station shall be under the control and management of the board of regents of the state university."

Another bill passed by the same Legislature provided for an experimental substation "west of the one hundred and second meridian in Nebraska." The regents of the University were authorized to select the necessary lands for the first station, and in the case of the second station, they were authorized "to take such steps in conjunction with the authorities of the United States as they deem necessary to successfully establish such station." Fifteen thousand dollars was appropriated from the temporary university fund for the first station and $5,000 for the second station.

The sandhill station was located by a committee of regents at Valentine, while the other station was located near Mitchell, in co-operation with the government, and became known as the Scottsbluff Substation.

The Valentine station, according to the report of the Board of Regents for the two years ending in 1910, included "40 acres of deeded land adjoining the town, together with about 1,050 acres of land from the military reservation, which is to remain under easement from the government, in the possession of the University as long as it is used for experimental purposes. A substantial house built of cement blocks and a barn of the same material are in process of construction. This material was selected in part with an endeavor to demonstrate the feasibility and economy of concrete construction in the sand hills region of the state."

By an act of Congress the University had been granted a perpetual lease by the War Department to 1,093 acres of the old Fort Niobrara Military Reservation, while the

town of Valentine voted the other forty acres to the University. The land comprising the Fort Niobrara Military Reservation passed from the control of the War Department to the Department of Interior about 1914, and most of it was thrown open to settlement. The land occupied by the substation was reserved and tendered to the Board of Regents at the nominal price of $1.25 an acre, and it was purchased by the Board of Regents.

The site for the station "west of the one hundred and second meridian" was recommended by a committee of the United States Department of Agriculture, which was to have the station in charge in co-operation with the University of Nebraska. This station was to be located five miles east of the town of Mitchell and seven and one-half miles northwest of the town of Scottsbluff. The regents agreed to this site, and 160 acres of land were set aside.

The station in Nebraska was to be one of several such experiment or demonstration farms which were to be established on reclamation projects in the United States that were subject to homestead entry. There was some difficulty in securing the money which had been promised by the Department of Interior for the buildings to be erected at this station, but finally on March 7, 1910, Secretary R. A. Ballinger approved the use of $5,000 for erecting buildings on the land which had been set aside by the Reclamation Service. On March 15, a memorandum of co-operation was signed between the experiment station and the bureau of plant industry of the United States Department of Agriculture. Fritz Knorr was appointed superintendent by the bureau of plant industry and his appointment was approved by the University.

Both of these new substations were now ready for work. At the Valentine station it was determined to give a trial to alfalfa, corn, sorghums, and all grasses which held any promise for the sand hills. It was also proposed to establish a dairy farm and to try out timber cultivation. A good idea of what this station was accomplishing is found in

Bulletin No. 156, *Farming Practice in the Sand Hills of Nebraska,* by James Cowan, who had been appointed superintendent of the farm on March 1, 1910.

Experiments showed that alfalfa would do well, especially where there was subirrigation. Potatoes gave every promise of becoming an important crop, when people gave more attention to the details of their growing and marketing. Corn and small grains did quite well, under the right conditions. It was found that trees could be made to grow in favored localities with the selection of the proper varieties and with a little care in handling them. James Cowan resigned as superintendent of the Valentine station in 1919 and E. M. Brouse was appointed to the position.

The work at the Scottsbluff station, carried on in cooperation with the United States Department of Agriculture and to some extent with the Reclamation Service, was primarily an investigation of the possibilities of growing crops on the irrigated land in that district. The law originally passed by the Legislature evidently did not contemplate investigations along the line of livestock, altho some feeding experiments have been carried on from time to time, especially in handling by-products of the sugar beet in feeding. The station has been a more or less practical aid and demonstration farm for those who have taken up irrigated land along the North Platte river.

Experiments have been conducted on both irrigated and dry land at this station. Crops which have been grown include sugar beets, alfalfa, potatoes, small grain, and forage crops. A small herd of dairy cattle was established at the farm to encourage dairying in this section. Experiments have been carried on with hog and sheep feeding. The proper rotation of crops on both dry land and irrigated land in that section has been an important part of the work of the station. Fritz Knorr resigned as superintendent of this station January 1, 1917, and James A. Holden was appointed to succeed him. In 1917, 800 acres of dry land adjacent to the station was procured by the University to be used experimentally.

The successful establishment of three substations for the college led to the establishment of still another, the Culbertson substation. The Legislature made provision in 1911 for its establishment with an appropriation of $15,000. The regents purchased a farm of 160 acres adjoining that town. "The larger portion of the appropriation has been expended in purchasing the site and acquiring the buildings and equipment necessary to the substation work; but the substation is now ready to begin work at the opening of the next crop season," the report of the Board of Regents for the two years ending in 1912 stated. The regents at that time suggested that the state was now sufficiently well equipped with substations and that it would be advisable to spend the money on those stations already in existence. The Culbertson station, however, was short-lived. The Legislature of 1915 ordered the land sold, the University giving possession of the farm on March 1, 1916.

The Legislature in 1917 made an appropriation of $32,000 for the purchase of an agronomy farm and an appropriation of $10,000 for the purchase of land to be developed into a model fruit farm. The agronomy farm of 160 acres, costing $36,000, was located one and one-half miles east and one mile north of the present farm campus, being really a supplementary tract of land to the central experiment station. The fruit farm was located on eighty acres of land near Union, in Cass County. Forty acres of fruit was immediately set out on this farm in 1918.

Dean E. A. Burnett of the college remained as director of the station thruout this period. Prof. W. W. Burr is now assistant director.

HONORARY RECOGNITION

One of the features of the last few years has been the recognition by the College of Agriculture of men "who have made notable contributions to the betterment of agriculture and rural life in Nebraska." This has been done by conferring certificates of honorary recognition upon

such individuals. Those who have received the honor include Samuel Clay Bassett, William Gunn Whitmore, Charles H. Morrill, George W. Holdrege, Fred W. Chase, Col. F. M. Woods, Samuel McKelvie, and Edward Provost Brown.

FINANCES

The college and experiment station farm in Lincoln was valued in 1922 at $401,200, exclusive of buildings. This shows perhaps, even financially, the value of the work done in promoting agricultural education in the seventies. The permanent endowment funds of the University, derived from the sale of its lands, had reached a total of $900,523.30 by the year 1922. At this time there were 7,156.29 acres of land unsold from the Land Grant of 1862, and 12,135.13 acres of land remaining from the land granted in 1864 under the enabling act of Congress.

The important feature of the latter part of this period was the abolition of the one-mill levy for the University, and instead the adoption of a general budget for the entire state government. It was in 1919 that the Civil Administrative Code was passed, and after that time the various branches of the state government were required to prepare budgets for their needs during each succeeding biennium. In 1917 a state activities fund had been created in which appropriations for the miscellaneous activities of the University were included, such as agricultural extension, the experiment station, substations, etc. This, however, was done away with under the new budget plan. The principal facts relating to the financing of the various developments in the college have already been noted and they need not be referred to again here.

REFERENCES

Agriculture. Bound volumes, 1909-1921. School and College of Agriculture, Lincoln.

Annual Reports and *Bulletins* of the Agricultural Experiment Station of Nebraska. 1909-1922.

Annual Reports of Cooperative Extension Work in Agriculture and Home Economics, State of Nebraska. 1914-1921.

BRADFORD, HARRY E. *Agricultural Education in Nebraska.* Thesis, University of Nebraska. 1917.

Catalogs of the School of Agriculture. 1909-1922.

Catalogs of the University of Nebraska. 1909-1922.

Federal Legislation, Regulations, and Rulings Affecting Agricultural Colleges and Experiment Stations. States Relations Service, United States Department of Agriculture, Washington, D. C. 1917.

HILL, D. S. *Introduction to Vocational Education.* Macmillan Company, New York. 1920.

Laws of the State of Nebraska. 1909-1923.

Nebraska Blue Book. Nebraska Legislative Reference Bureau. 1920.

Report on Agricultural Experiment Stations and Co-operative Agricultural Extension Work in the United States. United States Department of Agriculture, Washington, D. C. 1915.

Reports of the Board of Regents, University of Nebraska. 1909-1921.

The University of Nebraska, 1869-1919. Semi-Centennial Anniversary Book. The University, 1919.

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