Article Title: Charles E Bessey and the Transformation of the Industrial College

Full Citation: Thomas R Walsh, "Charles E Bessey and the Transformation of the Industrial College," *Nebraska History* 52 (1971): 383-409.

URL of article: http://www.nebraskahistory.org/publish/publicat/history/full-text/1971-4-Bessey_Indus_Coll.pdf
Date: 3/15/2010

Article Summary: Beginning in 1884, Charles Edwin Bessey led the University of Nebraska Industrial College from the twilight of manual training to the dawn of science education and research. At his arrival, the department was considered little more than a trade school, lacking even a microscope. Farmers were apathetic or opposed to the Industrial College and some politicians were anxious to destroy the college for political reasons. Despite the turmoil, internal dissension and jealousies within the University and societal pressures, Bessey was able to lay the foundations for an educational complex that has gained an international reputation.

Cataloging Information:

Names: Charles Edwin Bessey, A C True, Samuel R Thompson, Allen R Benton, Harvey Culbertson, Howard Caldwell, W H Wynn, Asa Gray, Professor Prentiss, D S Fairchild, Anderson Root, Henry H Wing, Chancellor Manatt, Seaman A Knapp, E P Savage, Frank S Billings

Place Names: Lincoln, Nebraska; Wayne County, Ohio; Ames, Iowa; Michigan

Keywords: "Land-Grant College Act" "University of Nebraska" "*State Journal*" "trade school" "College of Agriculture" "Morrill Act" " Moses Culver farm" "State Board of Agriculture" "Board of Regents" "Michigan Agricultural College" "Iowa State College" "Seville Academy" "American Association for the Advancement of Science" "*American Naturalist*" "Iowa Academy of Sciences" "*Essentials of Botany*" "Ross compound microscope" "Tolles Student microscope" "Botanical Library" "biological experiment" "Iowa State Agricultural College" "University of California" "Chairman of Botany and Horticulture" "land-grant college" "HR 216" House Roll 216" "College of Agriculture and Mechanic Arts of Nebraska" "*The Catalogue*" "*Hesperian*" "*Nebraska Farmer*" "College of Literature, Science and the Arts" "University Hall" "Agricultural Experiment Station"

Photographs / Images: Members of the "Sem. Bot." organization at NU in 1896; Moses Culver farm; Charles E Bessey with 10th reunion University of Nebraska class of 1900; Charles E Bessey in his office

CHARLES E. BESSEY AND THE TRANSFORMATION OF THE INDUSTRIAL COLLEGE

By THOMAS R. WALSH

IT WAS A COLD, RAINY NIGHT in Lincoln, Nebraska, in September, 1884, when the newly elected Dean of the Industrial College of the University of Nebraska gave his inaugural address. Few people were totally aware of the radical nature of the address of Dean Charles Bessey, even though the Lincoln *State Journal* proclaimed that Bessey had the right theory of industrial and university training, and that he was the right man in the right place.[1] In a few short words Bessey castigated the old agricultural colleges for being exclusively concerned with instruction of a local nature. He called for a new industrial college founded upon the laws of science applicable at all times and in all places. Lashing out at the type of student that often found his way into the agricultural college, Dean Bessey declared that the industrial college should no longer be burdened with the preparatory work "which can be and is done in the primary schools."[2] He directed his final salvo at the antiquated methods of teaching used in the agricultural colleges. As a master of the laboratory method of teaching botany, one could hardly expect Charles Bessey to endorse the practice of memorization and recitation. He believed that science could only be taught properly with the use of microscopes and other sophisticated apparatus.[3]

Placed in its historic context, the package of ideas brought

to the University of Nebraska by Bessey in 1884 was revolutionary. Agricultural and mechanical education in America had found little favor up to the outbreak of the Civil War. The Land-Grant College Act of 1862 charted a new course for American higher education. By offering a jackpot of land to every state willing to meet the stipulations of the Morrill Act, the federal government by 1870 had enticed thirty-seven states to sponsor the teaching of agriculture, mechanic arts, and military tactics. Despite these impressive figures, the *new* education faced massive problems.

The classical curriculum had locked its hold on higher education. Few administrators who had come from the classical tradition were willing to accept the more liberal approach to curriculum. Of more importance was the fact that there was no scientific tradition to follow. As the late historian A. C. True has written: "In agriculture there was very little knowledge which had been tested scientifically. The instruction therefore necessarily dealt almost entirely with practical details of farm operations or with theories resting on shallow and often unsound bases."[4] With no precedent to follow, many advocates of the new education believed that the new subjects, in order to gain respectability, would have to be taught by means of the old methods.

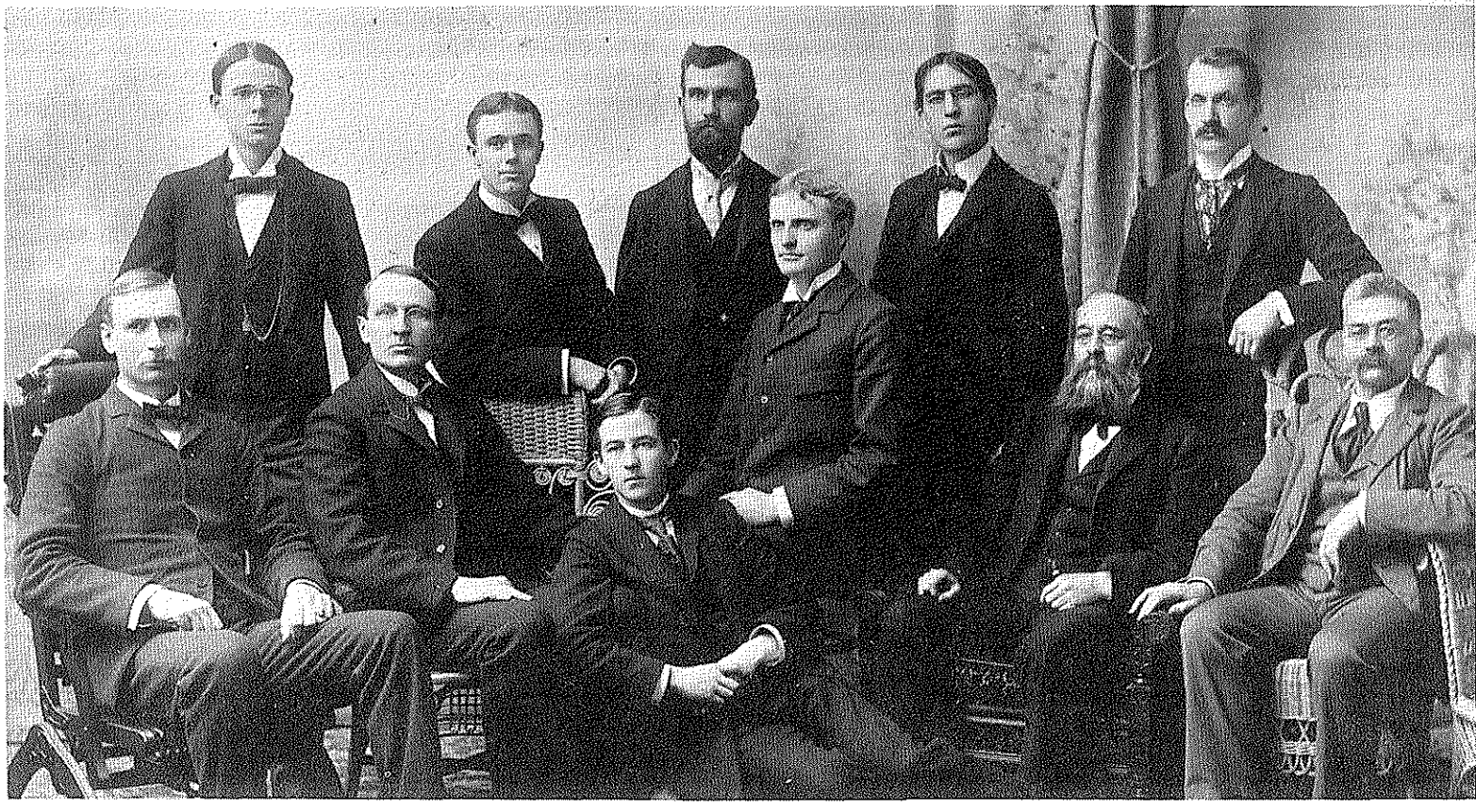
As if the attacks from the classical quarters were not enough, farmers also refused to offer their allegiance to the colleges of science. Experience, not science, paid dividends on the farm. In addition, it was too easy for a farmer's boy to be educated "away from" the farm, as courses in engineering or mechanical arts were often more appealing to farm boys than courses in agriculture. A smart lad with his eye on the future could see that agriculture was in a depressed state and that the key to America's destiny did not lie with farming. In order to combat this, industrial and agricultural colleges employed the practice of work-study. Students enrolled in agriculture had to work a required number of hours per week. It was hoped that farmers would then be less suspicious of the new institutions and would find it easier to send their sons off to college. The net effect of this procedure was to confirm in the minds of the traditionalists that the new colleges were nothing more than trade schools.

The most serious problem faced by the nation's industrial and agricultural colleges during this period was a lack of qualified students. Public high schools were not yet prevalent in the West and Midwest. To circumvent the problem, admission standards were lowered and preparatory courses were offered to bring industrial students up to the level of achievement of their counterparts in the academic colleges. This led to charges that students in the agricultural and industrial colleges were less capable and had to take courses which did not give vigorous exercise to the intellect.[5]

It was in this era of suspicion and change that the University of Nebraska was founded in 1869. In the case of Nebraska, the College of Agriculture was to be "united as one educational institution" with the state university.[6] The University opened in September, 1871, and in June, 1872, the regents ordered that the Agricultural College be opened that fall. There had been no demand for the opening of the Agricultural College, but the chancellor and the Board of Regents felt that they had an obligation under the terms of the Morrill Act.[7] The Board of Regents also asked the legislature in June, 1872, to deed 480 acres of saline lands to the university for use as a model farm.

The Agricultural College tried to steer a middle course between the theoretical and the practical. The catalogue of 1872 describes the theoretical aspects of the course as basically the study of sciences upon which "all correct agriculture must be based."[8] The catalogue goes on to describe the practical as demonstrating how the principles of science can be applied to farming.[9] The College offered two courses of study. The four-year course paralleled the scientific course of the University and led to a bachelor of science degree. The short course was to be completed in three to six terms and was designed for those who wanted some training but did not want to enter a degree program.[10]

With such an auspicious beginning it is hard to imagine that the Agricultural College went through its first year with no regular students, and its next two years with only a handful of pupils.[11] In 1874 the regents disposed of the model farm and purchased the Moses Culver farm, which consisted of 320 improved acres northeast of Lincoln.



Members of the "Sem. Bot." organization at NU in 1896 were: (back row, from left) Roscoe Pound, later dean of Harvard Law School; Albert Woods, later president of Maryland State College; Clarence J. Elmore, later of Grand Island, Nebraska, College; Frederick E. Clements, later of Carnegie Institute, internationally-known plant ecologist; – – – Saunders; (front row) Cornelius Shear, later with U.S.D.A.; – – – Taylor; Ernst A. Bessey, later dean of Michigan State Graduate College; Henry Ward, professor of zoology at University of Nebraska; Charles E. Bessey, sponsor; Lawrence Bruner, professor of entomology at University of Nebraska.

In the fall of 1874 fifteen students enrolled in the agricultural course of study, including twelve first year students.[12] The increase in enrollment was probably brought about because the college farm now had a building to house agricultural students at reasonable rates. Farmers also knew that they could send their sons to the Agricultural College, where they would have to work five days per week, two hours per day, "unless excused for a good reason."[13] The new farm was ideally located, "far enough from the city to be out of the way of its temptations to idleness and worse, and yet be near enough to enjoy all its literary and public advantages."[14] But perhaps the most significant factor in the enrollment growth was the crusading campaign of Professor Samuel R. Thompson, first Dean of the Agricultural College. Encouraged by Chancellor Allen R. Benton, Thompson conducted four farmers' institutes in the winter of 1873-1874, handing out useful information and selling the merits of agricultural education.[15]

Neither Thompson's efforts nor the attraction of the new farm had long-lasting effects on Nebraskans. The enrollment continued to sag, even though an engineering course was added in 1877.[16] By legislative action, at the request of the Chancellor and the Board of Regents, the original University charter was amended in 1877 to create a new Industrial College, which included agriculture, practical science, civil engineering, and the mechanic arts.[17] But this move clearly failed to attract additional students. Enrollment never climbed above twenty-six students for any one year during the next decade, and the average enrollment for the college was only thirteen students per year.[18]

The Industrial College continued to have its troubles, and in December, 1883, the regents charged Dean Thompson with incompetence. The regents made Thompson the scapegoat for the Industrial College's failure to attract students and for the miserable condition of the college farm. Although he was cleared of the charges, Dean Thompson, along with Professor Harvey Culbertson, resigned from the faculty in March, 1884, and joined with a group demanding the separation of the Industrial College from the University.[19]

It was not a happy state of affairs when Dean Charles Bessey arrived. The Industrial College had never managed to draw many students. It was scoffed at by students of the academic college and largely regarded as a glorified trade school. Nor had the agricultural course won the confidence of the farmers of the state. Howard Caldwell, an early graduate of the University and a long-time faculty member, charged that the Agricultural College had always been a source of weakness to the University. Caldwell wrote that the attention of the agricultural faculty had been focused on developing courses in agriculture. They never experimented, he said, and so they failed to prove to the struggling farmers of Nebraska that the Agricultural College was worthy of their support.[20]

The college farm, too, had been allowed to deteriorate to the point that by 1884 the State Board of Agriculture established a committee to investigate the condition of the farm. The committee reported that the farm was in a poor state of repairs and was not meeting its established purposes. Going beyond its original charge, the committee concluded that 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 [for] 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."[21] The State Board recommended a shorter course in practical agriculture and mechanics with useful trades. This the Board declared, could never be accomplished while the farm and the agricultural department remained under the control of the Board of Regents. The State Board of Agriculture urged the separation of the Industrial College from the University.[22]

It seems remarkable that under such turbulent conditions the Board of Regents was able to recruit a man of Bessey's experience and vision to take command of the Industrial College. Charles Edwin Bessey was born in Milton Township, Wayne County, Ohio, in May, 1845. The son of a pious Protestant farmer, Charles grew up under the tutelage of a father who considered money-getting secondary to living an honorable, industrious, and helpful life.[23] After attending the common schools of northern Ohio, young Charles went on to

Seville Academy and then migrated to Michigan, where he entered Michigan Agricultural College as a freshman in July, 1866. Bessey planned to major in engineering but decided midway through his program that botany was his first love. When he informed the president of the college that he was changing majors, he was told, "Well, Bessey, I am glad of it, but you'll never be rich."[24]

Graduating with a bachelor of science degree in November, 1869, Bessey worked briefly as the keeper of the greenhouse at Michigan Agricultural College. In December, 1869, Bessey was appointed as an instructor of botany and horticulture at Iowa State College of Agriculture at Ames, Iowa, and assumed his duties in February, 1870. Bessey was to spend his next fifteen years at Iowa State. As W. H. Wynn, an associate of Bessey's for thirteen years at Iowa State, later recalled, that with the exception of its first president, "no man in connection with the college in the formative period of its history, did so much toward shaping the scope and character of the college, as did Professor Bessey."[25]

Iowa State followed the practice of many agricultural colleges of that time and offered a three-month vacation to students and faculty during the winter months. Bessey was able to utilize his winter vacation period in 1872-1873, and also in 1875-1876, to study under the nationally known botanist, Asa Gray of Harvard. Bessey received his master of science degree from Michigan Agricultural College in 1872, and he was made a full professor of botany and zoology at Ames.[26]

Once firmly established at Iowa State, Bessey began to prove himself as a scientist, an author, and a teacher. In August, 1872, he was made a member of the American Association for the Advancement of Science. He was instrumental in the founding of the first Iowa Academy of Sciences and was elected the Academy's president in 1875. The University of Iowa conferred an honorary Ph.D. degree on Bessey in 1879 in recognition of his services to the state. In 1880 he was made a fellow in the American Association for the Advancement of Science. The same year, 1880, also saw Bessey named as botanical editor for the *American Naturalist,*

a post that he held for the next seventeen years. Bessey's most famous book, *Essentials of Botany*, was published in 1884, his last year at Ames. It went through seven editions, then was finally rewritten by Bessey and his son Ernst A. Bessey and published in 1914 under the title *The Essentials of College Botany*.[27]

No achievement at Ames was more precious to Bessey than his success in introducing the laboratory method of teaching botany. Bessey had been taught under the classical methods at Michigan Agricultural College: "We learned things from books, and were asked to repeat them orally at greater or less length to our teachers."[28] The college did own a huge Ross compound microscope, which was stored in the corner of the botany classroom and locked in its case. The instrument was never used, but, as Dr. Bessey later recalled, he got permission from Professor Prentiss to examine the microscope and was able to study it carefully. "This was my first use of the compound microscope, and this was all the practice I had with the instrument while in college. It was not much, but it was a beginning, and it enabled me to handle the next instrument which came into my hands when a teacher myself, and to this extent it made my own work more successful."[29]

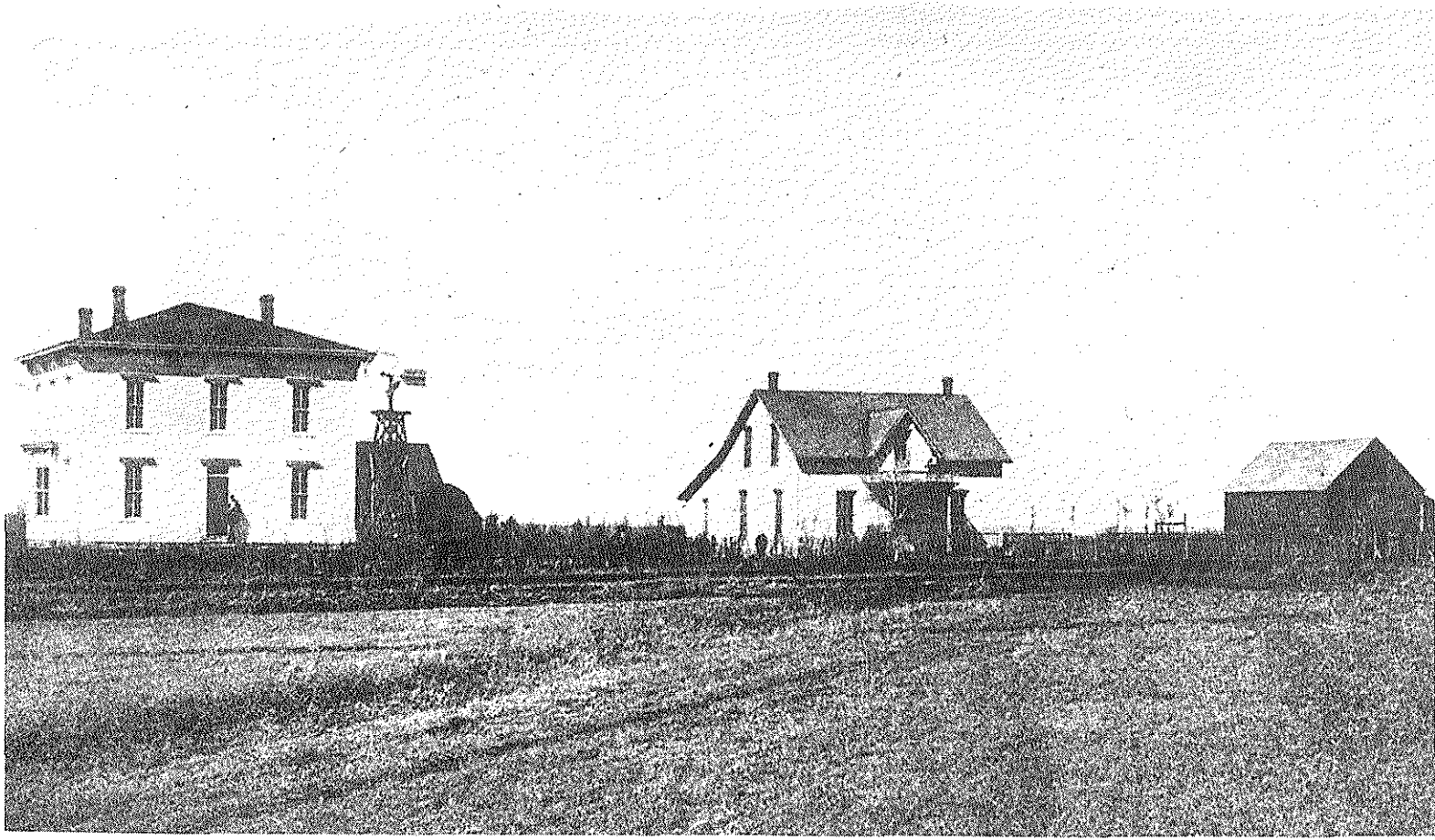
Bessey carried this experience with him to Iowa State, and in 1871 he was able to negotiate for the purchase of a "Tolles Student" microscope for the college. Even though the instrument lacked a micrometer, Bessey made one for it, "and it worked!!"[30] He used this instrument for demonstrating in his classes. In 1873 he established a laboratory on the second floor of the old main building, partitioned off the end of the hallway, moved in some tables, and tacked the sign "Botanical Laboratory" on the door. Most of his fellow faculty members were amused, but this did not deter Professor Bessey. Each student made his own mounts as a privilege granted the first semester. By the next year, 1874, this privilege became a regular part of the botany course.[31]

Bessey, when near his life's end, wrote a letter to members of the Iowa State Class of 1875, reminding them that they had been part of one of the most important biological experiments of the 19th century. "For before this," Bessey

wrote, "botanical laboratories were unknown in even the great universities of the country, and they are now found everywhere."[32]

In 1882 Bessey served as Acting President of Iowa State Agricultural College and continued on as Vice-President in 1883 and 1884. It is uncertain how much of Bessey's time these administrative duties required. It is no secret that he did not like to be drawn away from his botanical work, but Bessey was also ambitious. Dr. D. S. Fairchild, who served as the college physician at Ames for two decades, recalled that Bessey was anxious to make Iowa State into an outstanding college. If this task was impossible, Dr. Fairchild recollected, Bessey was ready to move on to a college that offered position and hope for the future.[33] As early as January, 1876, Bessey had written to the president of the University of California inquiring about the chair of botany that was to be created at that institution.[34] Again in 1881 Bessey had asked friends at the University of California to investigate the possibility of his seeking the job of state entomologist.[35] When the University of Nebraska made the offer of the Chairmanship of Botany and Horticulture in June, 1884, Bessey was interested. He turned down the offer because he was primarily a botanist and not a horticulturalist.[36] Two months later the salary bid was raised from $1,800 to $2,500, and included the Deanship of the Industrial College.[37] There was also a tacit understanding between Bessey and the regents that he was only to prepare the way for a professor of horticulture, who was to come at a later date.[38] On August 25, 1884, Bessey wrote to Chancellor Manatt accepting the university's offer, and the challenge of building an Industrial College of quality.[39]

A product of both the classical tradition and the scientific approach to education, Bessey held a unique view of industrial education, which he defined as "the *best education* for the industrial classes, that which will enable each man to do his best in the struggle of life."[40] Bessey was dismayed by those who tried to peddle the new education on the basis of practicality. He was offended by this approach because he believed the "money-getting value" of science was emphasized



The 320-acre Moses Culver farm northeast of Lincoln, purchased by the University of Nebraska Board of Regents in 1874, became part of the College of Agriculture campus.

at the expense of the "cultural-value" of science. "What wonder that college men, who have been accustomed to think of the culture-value rather than the money-value of the studies in the college curriculum should hold aloof from close association with such science!"[41] Bessey recognized that he was living in an era of change brought about by science. Yet he wanted to preserve the humane and "Christian" values that had always guided America. Change that offered a brighter future through science he welcomed; change that only whetted the material appetites of men he feared. Bessey envisioned a system of industrial education that prepared citizens for work in an industrial society, while giving them "the broad and liberal culture which humanizes and which develops in them those higher traits of an enlightened Christian character."[42] It was Bessey's dream to train young minds to collect and to classify data for arriving at sound generalizations. Through this process, he believed a better understanding of man's role in nature would arise. In Bessey's scheme, science was not the enemy of the old values, but the ally.[43]

Within a few weeks after his arrival at Nebraska, Bessey began to implement his plan. Reporting to the Board of Regents through the chancellor's office in December, 1884, Dean Bessey rejected the old work-study plan for land-grant colleges. The intent of the Morrill Act, he wrote, was to establish 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."[44] Bessey went on to state that students had to have a "personal acquaintance" with the forces and phenomena of nature which could only be acquired through observation in the field and the laboratory. He urged the regents to accept study in the modern sciences with an abundance of laboratory work. The dean also recommended the introduction of languages into the program; a true scientist, he reasoned, had to be able to consult the latest research and findings in European journals and books.[45] As an instructional aid to the new curriculum, Bessey called for the development of illustrative collections: a botanic garden with trees, shrubs, and herbs that grow in the temperate climate; a forage grounds and a grain garden with plants of the temperate zone; and a

collection of all fruits, vegetables, and woods of the world to be used as a part of this laboratory of nature.[46]

Overhauling the curriculum was but one part of Bessey's task. In the same report of December, 1884, he addressed himself to the proper work of the Industrial College. As a college of science, Bessey felt the Industrial College had an obligation to conduct research and experiments to shed new light on perplexing problems. He carefully differentiated between experiments of a "popular character" and experiments of a "scientific character." Popular experiments, he said, were designed to achieve immediate results whose value was narrowly limited to specific areas and changing conditions. Scientific experiments, he noted, were designed to discover profound principles or to establish facts about nature which took longer to conduct but which had wide applicability.[47]

Scientific experiments should have first priority, in Bessey's view. Popular experiments were often conducted by private enterprise and educational societies, but only colleges of science had the trained personnel and the expensive equipment to carry out scientific experiments. Dean Bessey further suggested that the Industrial College should conduct such popular experiments as those dealing with stock breeding and feeding, experiments dealing with grain crops and grasses or forage plants, and experiments dealing with the modes of culture for various crops; the college should report the results of the experiments annually to the regents.[48] In the area of scientific experiments full meteorological observations for an indefinite period of time were advocated. He suggested observations concerning soil temperatures, the percolation of water through soils, the humidity of soils, and the complete chemical and physical analyses of soils. He urged that a study of the necessity and practicality of irrigation in various parts of Nebraska be undertaken. A study of injurious insects and fungi within the state was proposed. The regents would receive annual reports on the progress of these experiments followed by a final report at the conclusion of each experiment.[49]

Thus, for the first time the Industrial College was

committed to a scientific approach for the educating of farmers and scientists and for the conduct of empirical research. Chancellor Manatt was elated and praised the regents for their appointment of Dean Bessey, but he warned them not to let Bessey stand alone in his attempts to reform the Industrial College.[50] The regents responded by heartily approving "the General Plan of Work as set forth in the Report, and recommend that the suggestions therein specified be carried out as rapidly as our means and facilities will permit."[51]

Although pleased by the plaudits given him by the influential journal *Science* for the development and the implementation of his plans,[52] Bessey had to face the challenge of those who wanted to disembowel the University by separating the Industrial College from the University. Representative Anderson Root, a Cass County farmer and a former employee at the college farm, introduced a bill (House Roll 216) which called for the creation of "The College of Agriculture and Mechanic Arts of Nebraska." The State Legislature was to appropriate $50,000 for the establishment of the institution in any Nebraska county or town that made an attractive offer.[53] Meeting the opposition head on, Dean Bessey debated the proposed legislation with former Professor Harvey Culbertson before the State Board of Agriculture. Bessey argued that the Morrill Act contemplated a university in the true sense and not just an agricultural college.[54] The *State Journal* allied itself with Professor Bessey and reminded Nebraskans of the heavy additional cost involved in operating two institutions of higher learning. Referring to Professors Culbertson and Thompson, the *Journal* said, "We need hardly say that the experience of the state with them has not been such a happy nature that it is worthwhile to expend fifty thousand dollars now and several hundred thousand dollars hereafter erecting buildings for the perpetuation of their systems of 'agricultural education'."[55]

The friends of the University were able to prevent House Roll 216 from passing. With the immediate danger passed, Dr. Bessey wasted little time in his dual program of reforming the curriculum and developing an experimental station as part of the Industrial College. *The Catalogue* of 1884-1885 was issued

in May, 1885. The description of the work in the Industrial College and the course entries reflected the Bessey approach. *The Catalogue* asserted that scientific knowledge was essential to Industrial College students, but that scientific knowledge had to come from empirical study, not from books. The sciences of chemistry, physics, zoology, botany, and geology were included in the new curriculum, along with the study of languages, history, and literature. The agricultural course was topped by a five-hour thesis to be written during the senior year. As a piece of original investigation, the thesis was to deal with the solution of some problem in agriculture or horticulture through the application of scientific knowledge. It was required that the thesis be completed and presented to the faculty prior to graduation.[56]

The curriculum changes made by Dean Bessey were met with mixed emotions. The *State Journal* called the new agricultural course equal to any other course on campus and added, "If there can be any reasonable demand which the new courses do not meet, it does not occur to us."[57] For the students enrolled in the agriculture course, the Bessey reforms were tantamount to expulsion. The reputation of the agricultural program had become so low that it was referred to as an "educational Botany Bay."[58] Writing in 1910, Professor Bessey recalled the impact of his early curriculum reforms with a sense of accomplishment:

> 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 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.[59]

Despite his rigorous reforms Dean Bessey found that the cloud of suspicion which hung over the agricultural course was not easily dissipated, and doubt pervaded the entire Industrial College. In reporting to the regents in November,

1886, Chancellor Manatt discounted the meager Industrial College enrollment of fifteen students and averred that they were equal to their peers in academic classes. The chancellor praised the work of Dean Bessey, noting that the Industrial College had labored under a burden of public mistrust but had advanced its standards to the highest level in the country.[60] The student newspaper, *Hesperian*, congratulated Dean Bessey on the steps taken to improve the agricultural courses.[61] The problem for Dean Bessey was that most Nebraskans could not comprehend the soundness of his reforms. The Industrial College was truly becoming a college of science. As the *Hesperian* pointed out, however, "such an institution bears no more resemblance to what the average man understands by an industrial school than a telescope bears to a plow."[62]

In reassuring the regents that they were on the right track, Dean Bessey reported in 1886 that the radical changes made in the agricultural course were essential. The college can better serve students now, Bessey wrote, by providing a course so buoyed by science as to make it intellectually rigorous and yet practical. He pledged that there was not a sounder course in any agricultural college with which he was acquainted. For those who want to farm but do not feel adequate for the pursuit of the degree, the dean said, there was always the two-year elementary course. Though not an advocate of the work-study plan, he reminded the regents that there was ample opportunity for agricultural students to work and defray the costs of their education. In addition rent free rooms were provided at the college farm.[63]

Dean Bessey would take no part in lowering standards for the agricultural course in order to attract more students. These young men, he stated, were training to become leaders in agricultural science, and they must be fully prepared to meet the challenges of the modern world. He would agree to and recommend that the state legislature establish a manual labor fund for the benefit of students in agriculture who could do constructive work and go to school. He concluded by expressing his conviction that the agricultural course was not fully supported by the people because they did not realize its value.[64]

Dr. Charles E. Bessey (front row) greeted the University of Nebraska Class of 1900 at its 10th reunion. Mrs. Bessey is at his left, rear. Dr. J. Stanley Welch is at extreme right, second row, and John J. Ledwith, extreme left, second row. Dr. and Mrs. F. A. Stuff are at right, third row. The affair was held at the Lincoln home of Eleanora Miller.

While adamant about quality standards, Dean Bessey did try to sell the merits and advantages of industrial education in an effort to raise enrollment. Advertisements were placed in leading journals to attract potential students. One ad that ran regularly in the *Nebraska Farmer* characterized the agricultural course as "equal in every respect" to other courses. After describing the abundant facilities at the University, the ad concluded by explaining that candidates not able to enter the freshman class could enter the preparatory department for preliminary training.[65] Dean Bessey also used every opportunity to meet with farmers and farm groups. In a report to the regents in December, 1887, Bessey suggested that formal provisions be set down providing for faculty attendance at farmers' institutes. He complained that he and Professor Henry H. Wing of the Industrial College could not continue to bear full responsibility for institute programs. He suggested that a circular be sent out from the University listing the names of faculty members willing to participate and the topics they would be willing to discuss. "In this way the University may do much good," he wrote, "and at the same time be in the way of receiving full credit for its efforts for the benefit of the people."[66]

Bessey's endeavors were to no avail, as enrollment never climbed above fifteen students during his first tenure as dean of the Industrial College. The college came under increased fire with the critics charging that the college was not conforming to the intent of the Morrill Act. Many critics believed that the University was using land-grant funds to support the literary and classical courses while neglecting the Industrial College. The accusations were vehemently denied repeatedly by the University's old friend, the *State Journal.* In one editorial, the *Journal* recommended that the members of the Nebraska Stock Breeders Association "go soak their heads." The Breeders Association had passed a resolution charging the University with misuse of Morrill Act funds. The *Journal* termed the charge untruthful, stating that support for the Industrial College had come entirely from the University's mill levy fund, since Morrill funds had never been expended for any purpose up to that time.[67]

By 1888, Dean Bessey was obviously beginning to feel the

sting of the college's critics. In May, Bessey wrote an impassioned report to the regents stating that the Morrill Act specifically intended the Industrial College to teach branches of learning related to agriculture and mechanics:

> It was not the intention that it should be a school of low grade, but a *College.* It was not intended that it should be a trade school, or a school in which merely the handiwork of an art or trade should be taught. It was not intended to be a school in which simply farm labor and farm methods were to be taught. The law specifies that it is to be a *College,* in which "branches of learning" are to hold the first place. Whatever else may be introduced must by the law be made secondary.[68]

He defended the agricultural course of the college as "one of the most symmetrical" to be found in the country.[69] The civil engineering course was designed to prepare students for a particular profession and for participation in democracy as good citizens.[70] He pointed out that plans were under way to organize a course in electrical engineering.[71] It was his opinion, Bessey wrote, that the Industrial College was by law obligated to teach the branches of learning related to mathematics, chemistry, physics, zoology, meteorology, geology, entomology, botany, and political economy. He concluded, therefore, that the science course belonged in the Industrial College, and not in the College of Literature, Science, and the Arts. Until the science course was transferred to the proper college, he admonished, the Industrial College would continue to be plagued with scanty enrollments.[72]

This was not a move designed solely to shelter the Industrial College from further attacks. Seven of the sixteen Industrial College faculty members also served on the faculty of the College of Literature, Science, and the Arts.[73] These seven individuals were charged with teaching all of the courses offered in science and military science through the College of Literature, Science, and the Arts.[74] Bessey's proposal did make sense, considering the organization of the University at that time. It seems only natural that Bessey should propose that the bachelor of science degree be awarded through the Industrial College.

Two months after Bessey had suggested the transfer of the science course, Chancellor Manatt was removed from office and Bessey was named Acting Chancellor and Dean of the College of Literature, Science, and the Arts.[75] In his first

report to the regents as acting chancellor, Bessey again recommended the transfer of the scientific course to the Industrial College.[76] If the regents were not convinced of the appropriateness of Bessey's request, legislative action soon convinced them that the only way to protect the integrity of the University was to bring the scientific course under the wing of the Industrial College. A legislative committee was appointed in 1889 to investigate the alleged misappropriation of Industrial College funds. This time the foes of the Industrial College were led by former Chancellor Manatt. Once again, legislation was introduced to dispose of the Industrial College and to establish a new industrial school separate from the University. The move failed, but when the regents met in April, 1889, they approved the transfer of the scientific course to the Industrial College and required that "students pursuing said course shall be catalogued as students of the Industrial College."[77] Critics saw this move as one designed to take the heat off the Industrial College. There is little doubt that the Board of Regents wanted to find a way to stop the constant attacks upon the Industrial College. But, as the *State Journal* reminded its readers, there never existed a division of interests between the Industrial College and the University. The teaching of sciences had grown, the *Journal* said, and the decision to transfer the courses was a culmination of policy, not a departure from policy.[78]

Transforming the curriculum was only one of the major accomplishments of Dean Charles Bessey. At the time the Agriculture College was founded, there was much debate about the function of the college farm. Was it to be a profit-making venture to serve as a model for students to emulate, or was it to be an experimental farm used in the business of scientific research? The question was never completely resolved until the arrival of Dean Bessey. A long-time advocate of national experiment stations, Bessey had written the article which set forth the purpose of such stations in a piece of legislation originally drafted by Seaman A. Knapp, president of Iowa State College.[79] Bessey's article was eventually incorporated into the Hatch Act, which became law in 1887. It is no great surprise, then, that Bessey viewed the farm as a laboratory for the Industrial College.

As discussed earlier, in his first report as Dean of the Industrial College, Bessey had recommended and the regents had approved a plan to carry out experiments of a "popular" and a "scientific" nature. In March, 1885, Bessey informed Chancellor Manatt that it was time to begin the implementation of his plans for experimentation.[80] The immediate response was that Superintendent E. P. Savage was dismissed as farm caretaker by the regents, and Professor Wing was placed in charge of the farm.[81] Wing could then put the farm in proper conditions for experimental use.[82] Next, Bessey requested the chancellor to secure a sum of money to be used to publish the results of Industrial College work and plans for future work.[83] On June 16, 1886, the regents approved the publication of reports by the Dean of the Industrial College giving "facts, statistics, etc. in connection with the past, present and prospective work of the Industrial Department."[84]

Such rapid progress was made that by August, 1885, a report was issued by Bessey which told of the changes in curriculum, the acquisition of new equipment and library additions and which described the changes being made at the "experimental farm." The farm is being put in good order, the report stated, to become an "efficient adjunct" of the college and a source of pride to the state.[85] Further steps toward experimental work were taken in June, 1886, when the regents authorized the hiring of Dr. Frank S. Billings to establish an experimental station for the investigation of diseases of domestic animals.[86] Dr. Billings was provided rooms and facilities to conduct his work at the University Building and at the farm.

By November, 1886, Dean Bessey could proudly report to the regents that the condition of the farm had been greatly improved, that popular experiments with stock breeding and feeding and with grasses and fungi plants had begun, and that scientific experiments including meteorological observations and the study of injurious fungi in the state had started. He also reported that Dr. Billings was working on remedies for hog cholera. He recommended that the number of agricultural experiments be expanded.[87]

In 1888 Charles E. Bessey was appointed acting chancellor of the University of Nebraska. This photograph is thought to have been taken in his office.

Bessey continued to work diligently for the passage of national experiment station legislation. He wrote letters to congressmen and senators; he sent out petitions and circulars; and he did all that was in his power to make the Hatch Act a reality. The act was passed by Congress on March 2, 1887, and made $15,000 available per year to state experimental stations on the condition that an annual report with the Department of Agriculture be filed, and that periodic bulletins for the consumption of interested farmers and scientists be published. The Nebraska Legislature approved the provisions of the Hatch Act on March 31, 1887, and Bessey was ready to set the station in operation almost immediately.

One week after receiving legislative approval to establish an experimental station, the regents approved the expenditure of $2,225 for the purchase of microscopes, apparatus, and tools to equip the pathological laboratory for the study of animal diseases. Dr. Billings was allowed an additional $200 to

enlarge the work building at the farm to conduct his research.[88] Bessey then proposed a widely expanded program of experimentation. Meteorological observations must be continued, he wrote. Chiding the regents, he pointed out that Doane College in Crete, Nebraska, maintained a state weather service. How could the state university, he asked, fail to support simple observations? The study of animal diseases under Dr. Billings had been under way for a year and Bessey urged the regents not to let the program lag. He asked for funds to construct a building on campus for the study and care of small animals. The chemical analysis of soils was not forgotten. He asked that the professor of geology at the University be generously supported in a study of the practicality of irrigation from numerous state streams. He reminded the regents that the return on the study of irrigation could be worth millions of dollars to the state. Finally, he asked that research on injurious insects and fungi of the state be liberally funded.[89] The regents replied on June 16th by appropriating $1,100 for the remodeling of rooms 2 and 4 in the basement of University Hall and for the repair of outbuildings at the farm for experimental work. The board also approved the expenditure of $3,500 for support of the research outlined by Dean Bessey. The money was to be used during fiscal year 1887-1888, after which the full appropriation of $15,000 by the federal government was to become available.[90]

At the next meeting of the regents on December 14, 1887, Bessey presented a plan intended to "perfect the Agricultural Experiment Station." He asked the regents to appoint various officers, including an agriculturalist, a chemist, a meteorologist, a geologist, an entomologist, a botanist, and a director. He further recommended incorporating the station for the study of animal diseases into the Experiment Station. The appointment of a station treasurer was suggested along with the appointment of an executive committee to transact the business of the station. Mindful of past relationships with agricultural societies, Bessey proposed that the State Board of Agriculture and the State Board of Horticulture appoint members to an advisory committee to assist in the operation of the station. He also recommended that the regents make

provisions to publish periodic bulletins and to file an annual report as required by law.[91] Showing full confidence in Bessey's judgment, the regents approved all of his recommendations and named Bessey the first station director.[92]

As Dean of the Industrial College and Director of the Experiment Station, Charles Bessey was now in a pivotal position to accomplish all that he had set out to do when he came to Nebraska in 1884. In his report to the Board of Regents in May, 1888, Dean Bessey explained that the purpose of the Hatch Act was to "provide for investigation and experimentation" within the industrial colleges. In his opinion, he stated, the Industrial College consisted of: (1) The College of Instruction and (2) The Experiment Station.[93] The regents endorsed the dean's ideas completely. Reporting to the governor in 1888, the regents prudently spelled out the effects of the Hatch Act on the University of Nebraska. The Industrial College was now a college of original research, experimentation, and publication, they stated, as well as a college of instruction. The Experiment Station was part of the Industrial College, but its purpose was investigation, experimentation, recording and diffusion of information.[94] The regents pointed out that the Morrill Act provided funds for the teaching of "the great *sciences* which underlie agriculture and the mechanic arts."[95]

In four short years Charles Edwin Bessey had led the Industrial College from the twilight of manual training to the dawn of science education and research. The amazing fact about Bessey's accomplishment is that the University had no base from which to begin when he arrived. His own department lacked even a microscope. Farmers and farm groups were either adamantly opposed to the Industrial College or were completely apathetic. Some politicians were anxious to destroy the Industrial College for political gain. The University itself was fraught with internal dissension and jealousies. Through all of this turmoil, Bessey was able to lay brilliantly the foundations for an educational complex that has gained an international reputation. It is estimated that the state of Nebraska alone receives a minimum of a 400 per cent return for every dollar invested in agricultural research and extension.[96] Graduates from the University's agricultural and engineering programs

have made untold contributions to the state, to the nation, and to the world. Charles Bessey gained prominence as a botanist, but the Agricultural College stands today as a memorial to Bessey, the educator—the man with a view of industrial education that helped to change the course of history.

NOTES

1. *Daily Nebraska State Journal* (Lincoln, Nebraska) Sept. 18, 1884.
2. *Daily Nebraska State Journal*, Sept. 17, 1884.
3. *Ibid.*
4. Alfred Charles True, *A History of Agricultural Education in the United States, 1785-1925* (Washington: U. S. Government Printing Office, 1929), 116.
5. For a more detailed discussion of the ideas in the above paragraphs see: Edward Danforth Eddy, *Colleges for Our Land and Time: The Land-Grant Idea in American Education* (New York: Harper & Brothers, 1959), Chps. 1-3; Frederick Rudolph, *The American College & University: A History* (New York: Alfred A. Knopf, Inc., 1962), Chp. 12; True, *A History of Agricultural Education in the United States*, Part 3.
6. *Enabling Act to Establish the Site of the Capital City* as quoted in Robert Platt Crawford, *These Fifty Years: A History of the College of Agriculture of the University of Nebraska* (Lincoln: University of Nebraska, 1925), 10.
7. Crawford, *These Fifty Years*, 20; Robert N. Manley, *Centennial History of the University of Nebraska: Frontier History (1869-1919)* (Lincoln: University of Nebraska Press, 1969), 34-35.
8. University of Nebraska, *The Register and Catalogue of the University of Nebraska 1872-73* (Lincoln: The Stateman Book and Job Print, 1873), 28; hereafter this publication for any year will be cited as *The Catalogue.*
9. *Ibid.*
10. *Ibid.*
11. Crawford, *These Fifty Years*, 21.
12. *The Catalogue, 1874-1875*, 36.
13. *Ibid.*, 33.
14. *Ibid.*
15. Crawford, *These Fifty Years*, 35-37.
16. *The Catalogue, 1877*, 33.
17. Crawford, *These Fifty Years*, 44; Manley, *Centennial History of the University of Nebraska*, 61.
18. *The Catalogues of the University of Nebraska From 1878-1888.*
19. Manley, *Centennial History of the University of Nebraska*, 100-101.
20. Howard W. Caldwell, *Education in Nebraska*, No. 32 of *Contributions to American Educational History*, ed. Herbert B. Adams (Washington: U. S. Government Printing Office, 1902), 44.

21. State of Nebraska, *Annual Report of the Nebraska State Board of Agriculture, 1885* (Lincoln: Journal Co., 1886), 19.

22. *Ibid.*, 20.

23. S. C. Bassett, "A Useful Man and Some of His Methods," *Nebraska State Journal* (Lincoln, Nebraska) Feb. 2, 1913, 12.

24. *Ibid.*

25. *Ibid.*

26. Harold G. O. Holck, "Charles Edwin Bessey (1845-1915), Inspired Botanist and Horticulturalist, Outstanding Agricultural Developer, Conservationist and Educator" (unpublished), 2; Raymond J. Pool, "A Brief Sketch of the Life and Work of Charles Edwin Bessey," *American Journal of Botany*, II (Dec. 1915), 507.

27. Pool, "A Brief Sketch of the Life and Work of Charles Edwin Bessey," 507-512; L. H. Pammel, "Dr. Charles Edwin Bessey," in *Prominent Men I Have Met* (Ames, Iowa: Iowa State University Press, 1925), 15.

28. True, *A History of Agricultural Education in the United States*, 132.

29. H. B. Ward, "His Service in Science," in *Charles Edwin Bessey: An Appreciation* (papers read as part of a memorial program held by the Nebraska School Masters Club, May 14, 1915), 21.

30. Charles E. Bessey Papers, Collection 12-7-10, General Botany Notes, Folder 6, University of Nebraska Archives; hereafter referred to as Bessey Papers.

31. *Ibid.*

32. Charles Edwin Bessey, Lincoln, n. d., letter to Iowa State Class of 1875, Ames, Iowa, Bessey Papers, Collection 12-7-10, General Botany Notes, Folder 6.

33. Pammel, "Dr. Charles Edwin Bessey," 7.

34. Charles E. Bessey, Ames, Iowa, Jan. 17, 1876, letter to President of the University of California, Berkeley, Bessey Papers, Collection 12-7-10, General Correspondence, 1876-1877.

35. E. W. Hilgard, University of California, Oct. 28, 1881, letter to Charles E. Bessey, Ames, Iowa, Bessey Papers, Collection 12-7-10, General Correspondence, 1880-1881.

36. Charles E. Bessey, "Some Early Horticultural History," *Agriculture*, IX (Oct. 1910), 6.

37. University of Nebraska, Minutes of the Board of Regents, Collection 1-1-2, University of Nebraska Archives, Vol. 2, June 13, 1884, 18; Aug. 22, 1884, 19.

38. Bessey, "Some Early Horticultural History," 6.

39. Charles E. Bessey, Ames, Iowa, Aug. 25, 1884, letter to Chancellor Irving J. Manatt, Correspondence to the Board of Regents, Collection 1-1-1, University of Nebraska Archives, Box 5, Folder 48.

40. Charles E. Bessey, "Industrial Education," speech printed in the *Annual Report of the Nebraska State Board of Agriculture, 1885*, 81.

41. Charles E. Bessey, "Science and Culture," *Science*, IV (July 31 1896), 122.

42. Bessey, "Industrial Education," 83.

43. Bessey, "Science and Culture," 122-124.

44. University of Nebraska, *Report of the Dean of the Industrial College, 1884* as quoted in *The Chancellor's Report to the Board of Regents for the Two Years Ending November 30, 1884* (Lincoln: Journal Company, 1885), 34.

45. *Ibid.*, 34-36.

46. *Ibid.*, 40-41.
47. *Ibid.*, 36-37.
48. *Ibid.*, 38-39
49. *Ibid.*, 39-40.
50. *The Chancellor's Report to the Board of Regents for 1884,* 17.
51. *Minutes of the Board of Regents,* Vol. 2, Dec. 17, 1884, 30.
52. The editors of *Science* offered their congratulations to Dean Bessey and to the Board of Regents for devising and implementing a plan of scientific education and research. *Science,* V (Feb. 20, 1885), 143.
53. Manley, *Centennial History of the University of Nebraska,* 103.
54. *Daily Nebraska State Journal,* Jan. 22, 1885.
55. *Daily Nebraska State Journal,* Feb. 3, 1885.
56. *The Catalogue, 1884-1885,* 42-44.
57. *Daily Nebraska State Journal,* May 17, 1885.
58. University of Nebraska, Pamphlet entitled "The Industrial College: A Brief Historical Sketch," (Lincoln: University of Nebraska, 1892), 12, Collection 8-00, University of Nebraska Archives.
59. Bessey, "Some Early Horticultural History," 6.
60. University of Nebraska, *The Chancellor's Report to the Board of Regents for the Two Years Ending November 30, 1886* (Lincoln: Journal Company, 1886), 18-20.
61. *Hesperian,* Oct. 12, 1886.
62. *Hesperian Student,* Feb. 20, 1885.
63. University of Nebraska, *Report of the Dean of the Industrial College, 1886* as quoted in *The Chancellor's Report to the Board of Regents for 1886,* 37-40.
64. *Ibid.*, 41-42.
65. *The Nebraska Farmer,* IX (Aug. 31, 1887), 314.
66. University of Nebraska, *Report of the Dean of the Industrial College, June 14, 1887,* Correspondence to the Board of Regents, Collection 1-1-1, University of Nebraska Archives, Box 6, Folder 58.
67. *Daily Nebraska State Journal,* Feb. 13, 1887.
68. University of Nebraska, *Report of the Dean of the Industrial College,* May 28, 1888, 2-3, Correspondence to the Board of Regents, Collection 1-1-1, University of Nebraska Archives, Box 7, Folder 62.
69. *Ibid.*, 7.
70. *Ibid.*, 8.
71. *Ibid.*,
72. *Ibid.*, 9-11.
73. *The Catalogue,* 1887-1888, 10 and 18.
74. *Ibid.*, 49-52; 55-56.
75. Professor Lewis E. Hicks was named Dean of the Industrial College in September, 1888, replacing Dean Bessey.
76. University of Nebraska, *Report of the Acting Chancellor,* Oct. 3, 1888, 4-6. Correspondence to the Board of Regents, Collection 1-1-1, University of Nebraska Archives, Box 7, Folder 64.
77. *Minutes of the Board of Regents,* Vol. 2, Apr. 10, 1889, 48.
78. *Daily Nebraska State Journal,* Apr. 14, 1889, 4.
79. Charles E. Bessey, "The Development of Plant Pathology in the University,"

Agriculture, LX (Nov. 1910), 21; True, *A History of Agricultural Education in the United States*, 128-129.

80. Charles E. Bessey, Lincoln, Mar. 1885, Memorandum to the Chancellor of the University of Nebraska, Correspondence to the Board of Regents, Collection 1-1-1, University of Nebraska Archives, Box 5, Folder 52.

81. *Minutes of the Board of Regents*, Vol. 2, Mar. 19, 1885, 37.

82. University of Nebraska, *First Annual Report of the Agricultural Experiment Station of Nebraska* (Lincoln: State Journal Co., 1888), 9-10.

83. Charles E. Bessey, Lincoln, June 10, 1885, memorandum to the Chancellor of the University of Nebraska, Correspondence to the Board of Regents, Collection 1-1-1, University of Nebraska Archives, Box 5, Folder 52.

84. *Minutes of the Board of Regents*, Vol. 2, June 16, 1886, 75-76.

85. University of Nebraska, *Bulletin 3 Issued by the Dean of the Industrial College*, Aug. 24, 1885, as taken from the *Annual Report of the Nebraska State Board of Agriculture, 1885*, 93-94.

86. University of Nebraska, *Eighth Biennial Report of the Board of Regents of the University of Nebraska* (Lincoln: Dec. 1, 1886), 13.

87. *Report of the Dean of the Industrial College, 1886*, 38-39, 43-44.

88. *Minutes of the Board of Regents*, Vol. 2, Apr. 7, 1887; *First Annual Report of the Agricultural Experiment Station, 1888*, 14.

89. *Report of the Dean of the Industrial College, 1887.*

90. *Minutes of the Board of Regents*, Vol. 2, 116, 120.

91. Charles E. Bessey, Lincoln, Dec. 14, 1887, memorandum to the Board of Regents of the University of Nebraska, Correspondence to the Board of Regents, Collection 1-1-1, University of Nebraska Archives, Box 6, Folder 59.

92. *Minutes of the Board of Regents*, Vol. 2, Dec. 14, 1887, 138, 140.

93. *Report of the Dean of the Industrial College*, May 28, 1888, 7.

94. University of Nebraska, *Ninth Biennial Report of the Board of Regents of the University of Nebraska* (Lincoln: State Journal Co., Dec. 1, 1888), 7.

95. *Ibid*, 49.

96. Howard W. Ottoson, "How Much is Research, Extension Worth?" *Farm, Ranch and Home Quarterly*, XII (Winter 1966), 2.