

PROMINENT MEN I HAVE MET

DR. CHARLES EDWIN BESSEY

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DR. CHARLES EDWIN BESSEY

There are still many citizens in Ames who can recall vividly the genial personality of Dr. Charles Edwin Bessey. They recall his buoyant spirit, and the brimful enthusiasm of the man, his kindly admonition to the students in botany, to the younger teachers on the right method to pursue in teaching the subject. He has also left a host of friends and many to whom he became deeply attached in Lincoln, Neb., where he carried on his work so successfully for many years.

He was born on a farm in Milton, Wayne county, Ohio, on May 21, 1845. His parents were frugal and industrious and respected and honored in the community where they lived. He was the son of Adnah and Margaret Ellenberger Bessey. He died on February 27, 1915 at Lincoln, Neb.

Soon after Dr. Bessey's death I wrote "In Memorium" as a tribute to his memory as follows:

"A host of friends throughout this land were grieved at the death of Dr. Charles Edwin Bessey, whose long years of activity as a teacher, investigator and citizen, were known throughout this broad country of ours. To his many friends in Iowa his death came as a shock, because it was here that he laid the foundations for that broad scientific life, a life devoted most enthusiastically to the science of botany, a life devoted to the teaching profession, a life devoted to the student in the class room and out of it. It was indeed a purposeful life, always full of sunshine and gladness. There were many of the older students at Ames who felt that Dr. Bessey was their personal friend, ready always to do something for them. To these students he gave his best. He gave some of his best years to administrative work at Ames and the University of Nebraska."

Doctor Bessey was always temperate. In my long acquaintance with him I never heard him say an unkind thing of anyone. Though he differed in opinion or may have disliked some persons, he tempered his remarks so as to leave the impression that the man or woman had splendid qualities. Professor Pool says, "He even sought to temper criticism whenever possible." He was devoted to his family and his friends. Many a young botanist owes his success to the help Dr. Bessey gave him. He was an inspiring teacher and always youthful. I last met him at the quarter centennial celebration of the Missouri Botanical Garden last October. Though perhaps not as vigorous as formerly he was an enthusiastic as when I met him more than a

quarter of a century ago. It was his unbounded enthusiasm that made him such a successful teacher. It enlisted a large number of men to study botany.

Chancellor Avery says: "His death is not only a misfortune to the university organization, in the upbuilding of which the effort of the greater part of his life was spent, but also a direct personal loss to students, alumni, and faculty people among whom he numbered his friends by hundreds." The *Daily Nebraskan* of March 1 says that the summation of the philosophy of life is formed, according to Professor Bessey's own expression, in the word "love".

Prof. R. J. Pool says, "To have met with him was to honor him; to have been taught by him was a priceless privilege; to have been intimately associated with him and to have walked with him into the fields and gardens and to have received from him an insight into the great realm of which he was master was to have been led very close to the Great Omnipotent who causes the snowflakes to fall, O, so softly, when our beloved friend passes the great divide where nothing but flowerland and love will greet him."

Dr. Bessey received his early training in the public schools of Wayne county, entered Michigan Agricultural college, had training under such men as Dr. Stanley Miles, Dr. Kedzie in chemistry, and Dr. Prentiss in botany. He received the degree of B. Sc. from Michigan Agricultural college in 1869 and two years after his service as professor of botany and zoology in Iowa State college the degree M. Sc. was conferred on him by his Alma Mater.

Prof. S. A. Beach, when the Bessey memorial group of trees were dedicated to him on the college campus at Ames, gave this interesting sidelight on the Bessey family:

"In these times, when the current of human events rushes onward as a turbulent river in rocky channels, it is interesting to note that Dr. Bessey was descended from a family which, through successive generations, experienced hardships, and that he himself was developed by struggles with adversity. Tradition is that his family were French Huguenots of the name 'Besse', who, to escape religious persecution, fled to England in the seventeenth century. About the middle of the eighteenth century they migrated to America and settled in Pennsylvania. Later they moved into Ohio. It was in a log cabin on an Ohio farm that Charles E. Bessey was born, May 21, 1845.

"Evidently his father was of Dr. Bessey's type. It was under him that he received his early education. Later he entered an academy and during vacation periods taught country schools to eke out his scanty means. In 1866 he entered Michigan Agricultural college with the intention of becoming a civil

engineer, but his love of nature and of plant life led him into the field of botany. He graduated from Michigan Agricultural college in 1869 with the B. Sc. degree and immediately became horticultural assistant there under his former instructor, Dr. Prentiss, the professor of botany and horticulture. He was put in charge of the greenhouses, which position he held for the few intervening months until he accepted the call from President Welch to take an instructorship at Ames in botany and horticulture. He came to Ames in February, 1870. In 1872 he was made full professor, later was given the chair of botany and zoology, and finally the chair of botany alone."

Dr. Stanton, who came here about the same time as did Dr. Bessey, and was one of his students, has said that he found Dr. Bessey "clear-visioned, self-poised, a wise counsellor, a tireless worker. It was in his heart that all men should come up into clean, pure, strong lives, intellectually and morally. I believe," he adds, "it may truthfully be said of him that he never inclined a human heart toward wrong, but that he has faced a multitude of men and women toward a nobler manhood and womanhood."

An act was passed by the legislature of Nebraska, creating the Bessey memorial fund. Professor Beach says, "The bill for this was drawn by an Iowa State college alumnus, who, as a student at Ames, had class work under Dr. Bessey. The bill specifies that this is to be regarded as a 'perpetual memorial fund evidencing the high esteem in which the people of the state of Nebraska hold the memory of the late Prof. Charles E. Bessey, who for more than thirty years was closely identified with their state university as professor of botany, dean of its agricultural college, dean of deans and repeatedly for years its acting chancellor.' It is added that 'He was a conspicuous figure in American science and education—one of the great teachers of his age, whose work and spirit have been the inspiration of thousands of students—a leader in the development of scientific agriculture, and the value of whose life and service to Nebraska and the west cannot be estimated in terms of money.'"

In a personal letter to me the same writer says of Dr. Bessey: "He was one of the great teachers of America. No man among those with whom I came in contact in my school days had a greater faculty of imparting that splendid alchemy of spirit which transmutes the dross of the common boy or girl into royal metal. His real monument is, and shall be, the host of genuine men and women whose lives were so largely shaped by him.

"As one of his former students, I can give the most hearty endorsement to these words of high praise and appreciation of his character and work, as I am sure all others will do who have

had the privilege of studying under Dr. Bessey."

"We recognize in Dr. Bessey," Professor Beach said, "a man of high standards, of scientific achievement, of education, of culture and of true nobility of character. To him the Iowa State college is indebted more than we can tell. His life was a part of its life during the important formative period of its early development. We delight to recognize his distinguished service by dedicating to his memory this group of trees near his old home on the campus. May they for many generations of students bring to aspiring young men and women the priceless lessons of the value of a life devoted to truth and to noble service of mankind."

During the early periods of the history of Iowa State college the long vacations were during the winter. Dr. Bessey, therefore, took this opportunity to study at Harvard 1872-1873 with the greatest American botanist, the well-known Dr. Asa Gray of Harvard university. This, I am sure, gave him a larger outlook on botanical science. It also gave him contact with many noted men of Harvard. He spent the winter of 1875-1876 also at Harvard. Dr. Bessey was so active in Iowa as a teacher, an investigator and a lecturer that the State University of Iowa conferred on him the degree Ph. D. in 1879. Some years later the degree of LL. D. was conferred on him by Iowa college (now Grinnell college). In 1898, Dr. Bessey married Lucy Athearn of West Tisbury, Martha's Vineyard, Massachusetts, on December 25, 1873. Mrs. Bessey is a splendid type of American womanhood. Two children, Carl Bessey, who graduated from the University of Nebraska, became professor of mechanics at the Oklahoma A. and M. college, Stillwater, Okla. Ernest Athearn Bessey was born on the campus at Ames on February 20, 1877. He is now professor of botany at the Michigan Agricultural college, following in the footsteps of his father in a splendid way.

The first man to give instruction in botany at Ames was Dr. Norton S. Townsend, who was later called to the State University of Ohio. The matter of selecting a professor of botany and zoology was left to Dr. A. S. Welch. Bessey was elected in 1870 and served as head of the department of horticulture, botany and zoology, then botany and zoology, and then professor of botany until 1884 being succeeded by Dr. B. D. Halsted.

Dr. D. S. Fairchild, who was the college physician from 1873 until in the '90's was a warm personal friend of Dr. C. E. Bessey, and in the Proceedings of the Iowa Academy of Science (31:69) he makes this very interesting comment, mentioning the fact that he was one of the charter members of the Iowa Academy: "Some felt the need of an association of scientific

men. Ames was but a small country village, and the college had but little to offer. There was no college spirit; the village and surrounding country was busy in securing homes, and the name 'agricultural college' did not very clearly define the college as an institution of learning, indeed, for many years there was a dispute as to whether the college was or should be an agricultural station, or an educational institution for the benefit of the agricultural classes.

"Professor Bessey was a man of great energy and had an ambition to make a real college and if the institution could not be brought to the status of an institution of learning, to avail himself of the first opportunity to secure an appointment in a college with recognized position or with a hope for the future."

He was acting president of the Iowa Agricultural college as this institution was thus called in 1882 and vice president 1883-1884. In 1884 he was elected head of the department of botany, University of Nebraska. He served in this capacity until his death. His executive abilities won recognition and he became acting chancellor 1888-1889. He was again made acting chancellor 1899-1900, 1907-1908. He was head of the department of botany and dean of the industrial college of the university 1884-1888 and dean of the college of literature, arts and science 1888-1891.

Let me quote Professor Pool in connection with Dr. Bessey's going to the University of Nebraska:

"Professor Bessey was notified in June, 1884, that he had been elected professor of botany in the University of Nebraska. He was then at Ames college, Iowa. The selection had been made by the regents of the university without his knowledge, but he was sufficiently interested in the incident to come to Lincoln 'to look the place over'. During that first visit to the university he found that nothing had been done along botanical lines and he was quite naturally reluctant to leave the accumulation of his fifteen years' labor at Ames to go to a new state to build up a new department from the very beginning. So he told the regents that they were not ready for him and declined the offer of the professorship. A second offer, extended in August the same year, included the deanship of the industrial faculty or college as well as the professorship of botany. After another trip to Lincoln and a consultation with the board of regents Professor Bessey accepted the second call and his inaugural address was delivered at the university in September, 1884. He began his active class work at the university in January, 1885. His first thought was always with the work of his classes in lecture room and laboratory and except for a few brief interruptions he continued that work to the beginning of his final illness."

Professor Pool tells us that there was nothing in the way of a herbarium, and through the botanical survey of Nebraska, 30,000 Nebraska specimens were added to the collection, and the whole collection at the time of his death contained 300,000 specimens. The laboratory facilities grew immensely, so that after his death it became necessary to build a new building, which was named Bessey hall. Professor Pool also gives us the history of the origin of the botany seminar of the University of Nebraska, which has been such a great help in the training of young botanists at that institution. Dr. Bessey left with Iowa State college some 15,000 specimens, many from Iowa. This collection was partly destroyed by the fire which destroyed the old Main building. This collection was made during the formative period of the college.

The stimulating methods of the man and the esprit de corps that were always conspicuous about his department were reflected in a particularly interesting and important form in the institution of the Botanical Seminar by a few of his advanced students in 1886. The "Sem. Bot." soon became and has always been one of the most enthusiastic and useful departmental clubs in the land. The organization was largely apart from his supervision but yet his was the guiding spirit from which the members drew their enthusiasm whether that factor led them out on a dark night to attack the "Lits and Philistines" or sent them into a remote section of the state in search of some new element of the flora.

Chancellor Avery paid the following tribute to Dr. Bessey: "Especially touched by the passing of so revered a one of their number, the members of the faculty of the university have been quick to acknowledge their loss. The sorrow that the whole university feels has elicited, among the others, these true appreciations of the life and service of a noble man." (Daily Nebraskan, March 1, 1915.)

The brief services for Dr. Bessey were held at his home, by the Rev. M. A. Bullock, and the Rev. R. W. Waite, pastors of the two Congregational churches in Lincoln.

"Many and extremely rich were the floral emblems that covered and surrounded the casket and the adjacent platform. These represented the most evident feelings of sympathy and appreciation from Dean Bessey's former students in many parts of the country and from friends who knew him outside of college halls.

"Among the plants which were banked about the chapel were many palms, ferns, and other plants which Professor Bessey himself had secured for the university conservatories."

Raymond J. Pool gave the essence of the philosophy of Dr. Bessey and words that Dr. Bessey used in connection with the Botanical Seminar:

This is an enlistment for a life.
It will be a pleasant service;
It will be a pleasant life;
But it must be for life,
And for the love of botany,
And for that alone.
And not for any of its emoluments.

The board of regents were in session during Dr. Bessey's illness, and the following resolution was passed on February 15, 1915:

Whereas, Dr. Charles E. Bessey is confined to his bed with a serious illness, be it Resolved, That the board of regents of the University of Nebraska extends to him and his family its most profound sympathy, its appreciation of his long years of faithful and devoted services to the University of Nebraska and the hope of the members of the board for his speedy return to health.

A magnificent building named in his honor, Bessey Hall, has three stories above ground and provides ample lecture rooms and laboratories for the departments of botany, zoology and bacteriology. It is of brick trimmed in Bedford stone and cost \$170,000.

Can you wonder that a man who thoroughly believed and taught and LIVED such philosophy should leave so tremendous an imprint upon the thousands who have been in his classes and upon the hundreds who have been associated with him in many other relations of life's complexities?

The Daily Nebraskan of March 1 contained the following splendid editorial: "The hundreds of young men and women who are at Nebraska preparing for their life work may find in this bit of Dr. Bessey's philosophy the key to a successful life. In an age when materialism is at a premium it is easy for us to become imbued with the idea that the purpose of our education is to better fit us to make money.

"Dr. Bessey's life is a rebuke to any man who forgets the real purpose of his college training—fitness to serve his fellow men."

Dr. Bessey's life was felt far beyond the campus of the University of Nebraska or the campus of Iowa State college. This came from Cottner university:

"In view of this action, the committee desires to transmit to the friends and associates of Dr. Bessey our heart-felt sympathy in their great loss and to express the highest possible appreciation of his great services in the cause of education in the nation, and especially in Nebraska, where he has been a conspicuous leader.

"We recognize him as the highest type of scientific scholarship associated with the loftiest Christian and social ideal."

Paul Sears, one of the fellows in the department of botany, University of Nebraska, says:

"It is hard to speak of a monumental life without resorting to words that are either trite or fulsome. The simple dignity of our departed Dr. Bessey makes either extreme unthinkable.

"Those of us who have come, often from distant places, to sit at the feet of this great teacher have found that his great concern was not to acquaint us with the mere minutiae of science. He was more than a transmitter of useful facts or an efficient director of research, for, not neglecting these functions, he threw the weight of a marvelous teaching personality into the business of showing us how to live.

"His favorite lessons were stories from the lives of other men, but they gained their real significance from the lofty soul of the teller."

The department of botany of the University of Nebraska had a wonderful growth under his headship. Dr. Bessey did all the work at first, himself, in a single room, and this is where he trained Webber, Smith, Woods, Marshland and Schofield. For four years he labored alone and in 1888 he received his first assistant, Roscoe Pound, well-known dean of the law school, and an authority on law now connected with Harvard university; then came Herbert Webber of the University of California, well known for his splendid contributions to botany; Dean Woods, who became dean of the college of agriculture, University of Minnesota, and later president of the University of Maryland, and a splendid executive. Then came Dr. Frederick Clements, well-known authority on ecology. It was while Dr. Clements was his assistant that I visited the University of Nebraska and saw the fine work Dr. Bessey was doing.

Training of men, of course, is the most important item, but many people look at the physical side of a university or college as the most important. They measure a college in this way, and I do not wish to minimize this, but after all a university or college is judged by the men it turns out. Equipment is needed, of course.

Dr. Bessey's work at Ames began with the economic phase of botany, and he was interested in plant pathology and rusts, and at Nebraska he devoted his attention to the subject of grasses and economic plants, weeds and plant diseases. He helped organize the first farmers' institute. The subject of tree planting interested him, not only at Ames but in Nebraska. Dr. Pool tells us that Professor Bessey played a very important part with the federal department of agriculture, looking toward the establishment of agricultural experiment stations.

He finally defined the duties of such experiment stations in a paragraph which was later adopted verbatim as a part of the law known as the Hatch act. It is also of local interest that he wrote the first and second annual reports of the Nebraska agricultural experiment station in 1888 and 1889.

Eminent assistants trained by Dr. Bessey:

Under Dr. Bessey's supervision the department of botany of the University of Nebraska was recognized throughout the country and many of its scholars have been called to high positions in the field of botany. Among the number are: Roscoe Pound, '88, of Harvard; Dr. Webber, '89, of California university; Dr. P. A. Rydberg, '91, of the New York botanical gardens, New York; Dr. F. E. Clements, '94, formerly of University of Minnesota; Dr. Ernest Bessey, '96, Michigan agricultural college; Dr. R. A. Emerson, '97, Cornell university at Ithaca, N. Y.; Dr. C. L. Shear, '97, United States department of agriculture at Washington, D. C.; Prof. A. T. Bell, '98, University of Louisiana at Baton Rouge; Dr. G. G. Hedgecock, '99, of the United States department of agriculture at Washington, D. C.; Dr. J. L. Sheldon, '99, of the University of West Virginia; Dr. H. L. Shantz of the United States department of agriculture at Washington, D. C., later professor of botany, University of Illinois and now president of the University of Arizona; and Drs. R. J. Pool, '07, and L. B. Walker, '07, of the University of Nebraska. Melvin R. Gilmore, our greatest authority on plants used by the Indians and in general an authority on the Indian, of the Heye foundation, New York; Dr. J. C. Arthur, the leading authority in the world on rusts, was one of his first students at Ames. Subsequently such men as Prof. S. A. Beach, noted authority on horticulture; Dr. C. F. Curtiss, able director of the college of agriculture at Iowa State college; Dr. N. E. Hansen, one of the leading men on the breeding of fruits; Herman Knapp, splendid business manager and acting president, 1926-27, Iowa State college; Prof. J. B. Keffer, professor of horticulture at the South Dakota experiment station and later extension service at the University of Tennessee, were other students at Ames, Ia. G. B. MacDonald of Ames, able forester, graduate of the University of Nebraska.

Opinions of Students in Regard to Dr. C. E. Bessey.

C. E. Underhill, a prominent attorney of Onawa, Ia., in an interview made this statement:

"I had botany under Dr. C. E. Bessey. Dr. Bessey was a true scientist and a very enthusiastic teacher. When I was in college Dr. Bessey had just issued a textbook on structural botany. In his lectures and classroom work he put a great deal of stress on that branch of the subject. He made the subject intensely interesting. I recall distinctly in his laboratory work that he gave us some of the hairs from the petunia plant, placed under the high power of the microscope and showed us the movements of protoplasm in the hairs. He also made practical

illustrations of the growth of plants. Dr. Bessey was one of the best instructors I ever had."

Dr. E. B. Cramblitt of Ames, a student of his, in an interview stated that "Dr. Bessey was a splendid man and a fine teacher."

Judge James S. Dewell of Missouri Valley, Ia., class of 1881, for many years a prominent attorney, now judge of the Fifteenth judicial district of Iowa, says:

"At the time I was in college Dr. C. E. Bessey was a comparatively young man. He was an intensive worker and very enthusiastic about any work he undertook. His special work was botany but he was quite as enthusiastic about anything he was called upon to do. He did some teaching in zoology. He was analytical in his methods of instruction, always investigating thoroughly every subject rather than making use of the text book. In a social way he was somewhat distant from the students due to the fact that he was intensely interested in his chosen work. Sometimes he failed to give the students personal interviews but I attributed this to his enthusiasm for his own work. After a student graduated he became very companionable. Some years later after graduation I met him in Des Moines and made the remark that he could talk to me now as he could not while I was a student in the college."

Judge E. F. Faville, member of the supreme court of Iowa, in an interview given me on April 3, 1922, made this statement:

"Dr. Bessey wrote his text book when I was in college. When Dr. Bessey left I helped him sort his private herbarium from the college collection. He had a very fine personal collection which he took with him to the University of Nebraska. It was a real job to get it out of the college herbarium. Bessey used to examine us on our herbarium. He would first look over the herbarium and would see that the plants had the correct names. Then he would conceal the names and ask the students to identify the plants. He was always very popular. Dr. Bessey was a remarkably fine teacher. They had during Dr. Bessey's time a disciplinary committee of which Dr. Bessey was a member."

George I. Miller, a student of Iowa State college, member of the class of 1877, expressed himself:

"Dr. C. E. Bessey was a very unusual teacher, a man of very fine personality who was able to bring his material to the students in a forcible and splendid way. He was one of the strong men of the faculty."

J. B. Hungerford, editor and publisher of the Carroll Herald, and graduate of Iowa State college, class of 1877, was a student of Dr. Bessey's. This is his impression:

"Dr. Bessey was a wonderful enthusiast. He struck me as

the most wonderful teacher I have ever met. A splendid man. He was eccentric in many ways. His beard was trimmed in a certain way and he would comb it out with his hands. The students had a little rhyme, 'He pat it cheerily, is my name, and picking posies is my game'."

Dr. Ada Hayden of Iowa State college, graduate of the class of 1908, gave the following estimation of Dr. Bessey:

"He was an outstanding educator, and his writings are all of classic value. He certainly still exerts a great influence upon scientific workers, particularly in the field of botany. He was one of the first scientists to introduce the laboratory method of teaching botany and studying the movement of protoplasm in plants by the aid of the microscope."

C. E. Taylor, one of the pioneer citizens of Ames, told the writer once that Dr. Bessey was a universally respected and beloved citizen. He stood out among the faculty in the early day as one of the strong men of the institution. He was affable and pleasant to everyone.

Judge Thomas Charles Burke, class of 1881, in an interview given to the writer concerning Dr. Bessey says:

"Dr. Bessey was an enthusiast in his line of work, and had the happy faculty of impressing his enthusiasm upon his students. He was a bottle of nervous energy, efficient, not only in botany research but in all lines of scientific thought. There was also a friendly antagonism between Wynn and Bessey in their different attitudes on science and literature. Wynn was the ethereal and Bessey did not care very much for this."

General James Rush Lincoln, who was instructor in military science and tactics at Ames during the latter part of Dr. Bessey's connection with the institution, added this concerning Dr. Bessey: "He was a great scientist."

Henry McCarthy, one of the pioneer settlers of Ames and well acquainted with the early members of the faculty of Iowa State college, in an interview on February 24, 1922, made this statement in regard to Dr. C. E. Bessey: "Everybody liked Dr. Bessey."

Mrs. A. B. Shaw of Sierra Madre, Calif., whose father was Dr. A. S. Welch, and who was thoroughly familiar with all the early instructors, gave me this interview on May 5, 1923, concerning Dr. Bessey:

"Dr. C. E. Bessey came here in February. We were living in the Farm House. He came down to our house and asked to see President Welch. I had been taught to be very kind and courteous to people coming to the house to see my father, so I ushered him into the parlor. He was very shy. I began to talk to him and gave him the history of all the teachers here and those who had been here. He told afterwards that I talked

to him in such a way that his shyness left him and that by the time my mother and father had arrived he was quite himself. People knowing Dr. Bessey later would not know of his previous shyness. I remember my father was thinking of the house question and asked him if he was married and he said no he was not but that he could be. He was married the next spring to a lady from Martha's Vineyard, Mass. He evidently met her while working with Dr. Gray of Harvard university."

In an interview with Dr. A. B. Shaw, husband of Mrs. Shaw, the following comments were made:

"I remember that Dr. Bessey had the characteristic of interesting himself in different subjects; for instance, he taught a course the first time and interested himself in one phase of the subject and the next time he taught this same course he interested himself in an entirely different phase of the subject, so that each course in freshman botany was different from the next course. He loved to take on a new subject. Dr. Bessey taught zoology, botany and horticulture and comparative anatomy. He was a remarkable student and teacher, was enthusiastic and always learning."

T. W. Shearer, a prominent attorney of Minneapolis, Minn., and a graduate of Iowa State college of the class of 1879, had this to say about Dr. Bessey:

"Prof. C. E. Bessey was among the close seconds in point of time at Ames, succeeding Professor Townsend to the chair of botany. 'Charlie' as we called him, was a very remarkable man. A splendid educator, the author of Bessey's 'Morphological and Physiological Botany.' An indefatigable worker, and a very happy father."

Parley Sheldon, one of the pioneers of Ames who knew all of the members of the early faculty of the college and a universally esteemed citizen of Ames, in an interview he gave me on June 15, 1923, had this to say about Dr. C. E. Bessey:

"Dr. Bessey was a great success in the department of botany. They lost him because of more liberal compensation elsewhere, and the same is true also of other men in the college who left because they paid more liberally elsewhere and so I recall this in connection with the loss to the college of Dr. H. Osborn, who was a great man for the institution."

Prof. Adolph Shane, a graduate of the University of Nebraska of the class of 1901, gave the following information in regard to Dr. Bessey:

"I am now of the Iowa State college faculty. I came in contact with him as dean of the industrial college of the University of Nebraska. I am glad to say a word about Dr. C. E. Bessey, a wonderfully fine teacher, a splendid lecturer and thinker, and a man of splendid personality, loved and appre-

ciated by all. He was keenly interested in all scientific matters and took a great interest in Sigma Xi. In the summer of 1902 a college chum and I were climbing Pike's Peak; we reached the half-way house. We saw Dr. Bessey with a vasculum over his shoulder picking plants and delving into the rock for specimens. We addressed him and said, 'We are glad to see you'. He at once replied, 'I left a classmate of yours at the half-way house'."

Dr. O. H. Cessna of the Iowa State college and one of his early students, tells me that he had an intense admiration for Dr. Bessey, who had not only an inspiring personality but was a great teacher. "I did good work under him because he inspired me to be exact; he did not tolerate slovenly and indifferent work. He was clean cut and neat in his appearance. He was punctual. I, therefore, felt it my duty in his class to do good work with Dr. Bessey because he wanted me to do so."

Activities of Dr. Bessey

Dr. Bessey in the new edition of Johnson's Universal Cyclopaedia, wrote many signed articles on botany. It required much time to prepare some of these, as for instance take the article on Botanic Gardens, in which he refers to the garden Mithridatid and Attalus established in Pontus and Pargannus more than 2,000 years ago in which poisonous plants were grown. A list of other botanic gardens is given. The treatise on Botany is a well condensed account of the plant kingdom from the standpoint of morphology, physiology and systematic botany. Then, too, there is a little on the history of botany. There is this interesting statement: "Some knowledge of plants should be possessed by everyone," because of its importance to agriculture, horticulture, medicine and when properly pursued "may become an important part of the general culture of the educated man." And in regard to the evolution of plants he says: "About 1860 the Darwinian theory put the natural system on a sure foundation by explaining the relationships on which it is based." Bessey for many years contributed to the Breeders Gazette.

Dr. Bessey was active along many different lines. Some of these activities began while he was at Ames as botanical editor of the American Naturalist from 1880-1897. He was the state botanist of Nebraska from 1893-1907, and during his incumbency inaugurated a large amount of scientific work, such as a forest policy, grazing, and a botanical survey of Nebraska. He was the botanical editor of Johnson's Encyclopaedia beginning in 1893. In 1899 the International Academy of Geographical Botany conferred a medal on him for distinguished service

in botany. He was a fellow of the American Association for the advancement of science and during the last year at Ames, 1884, was secretary of the biological section. He was vice president of this section in 1893.

Dr. Bessey joined the American Association for the Advancement of Science at the Dubuque meeting of the association in 1872. Dr. Asa Gray, M. S. Bebb and other notable scientists, were present at this meeting, Dr. Gray giving his classical address on Sequoia and Its History. He attended many meetings of this association, and was elected president at the Minneapolis meeting 1910-11, presided over the meeting at Washington, D. C., 1911-12, and delivered his retiring address at the Cleveland meeting 1912-13 on the topic "Some Next Steps in Botanical Science." His delivery of this address was splendid. He kept his audience interested by the unique way in which the scientific matters were presented.

He was president of the Botanical Society of America 1895-1896, and president of the Society for the Promotion of Agricultural Science 1889-1891. He was the prime mover in the organization of the Iowa Academy of Science in the 70's.

His colleagues in Iowa elected him the first president of the Iowa Academy of Science in 1875 and he served in this capacity until 1884.

Dr. Bessey came back to make an address to the Iowa Academy on April 20 and 21, 1906, at which time the writer went over with him some of the perplexities of teaching of botany in the early days at Ames. He told me about how he tried to meet the students in one of the rooms in the old main building, and how the equipment was inadequate. He was still interested in Ames. At this meeting of the Iowa Academy he presented a fine paper on the Forest Trees of Nebraska. The trees were briefly described and the distribution maps were given.

He was president of the National Teachers' Association (N. E. A.) in 1895 and 1896, and American Microscopical Society in 1907. He was a member of the Nebraska Rural Life commission in 1911, and president of the Nebraska Academy of Science from 1891-1894.

He held membership in many societies, as Torrey Botanical club, Botanical Society of America, Iowa Academy of Science, fellow of the American Association for the Advancement of Science, Association Internationale Des Botanists, National Geographic society, St. Louis, Davenport and Washington Academy of Sciences, Wild Flower Preservation society, American Breeders association, American Forestry association, Phi Beta Kappa and Sigma Xi.

Teaching of Botany

Elsewhere I have said that Dr. C. E. Bessey was a great teacher. He tells us in a paper in *Science* (N. S. 37:7-13) what the teaching of botany was like in the early days. Dr. J. W. Harshberger in one of his contributions to the history of botany says: ". . . The mention of these books would enter into details which would destroy the purpose of this chapter, as a general survey of the main trends of botany in America. The principal American manuals of botany are listed in this chapter's bibliography. Apropos of this third period the late Prof. Charles E. Bessey may be quoted: 'Consider for a few minutes the botany of 40 years ago, when you could count on the fingers of one hand the American colleges that had chairs of botany. And here I use the term chair advisedly, for they were literally chairs and not departments, much less laboratories. The botany dispersed from these chairs was the delightful study of the external morphology of the higher plants, especial emphasis being laid upon the structure of flowers and fruits. And with this external morphology there was always associated the classification of the higher plants, in its simplest form the pleasurable pastime of identifying the plants of the neighborhood, and in its more advanced form representing the work of Torrey and Gray and Vasey and Engelmann. The botany of that day was not without its laborious investigations and its tangible results. Every new area was a great out-of-doors laboratory to be diligently studied from border to border. That was the day of the founding of many small botanical gardens, and small local herbaria, some of which having served their purpose disappeared long since, while others have grown into great and flourishing institutions of today.'"

Dr. Harshberger says: "Incidentally it should be mentioned that the first botanical laboratory of the United States for undergraduate instruction was the one at Iowa State Agricultural college (Ames) presided over by the late Prof. Charles E. Bessey in 1870-1884. The laboratory method for advanced students was in operation at Harvard the year previous."

Letters From Earnest Bessey Regarding Early Teaching of Botany

Dr. Earnest Bessey of Lansing has given me the following interesting facts:

In response to your letter of September 29th and your personal request made to me at Nashville I am sending you copies of letters written by my father to Professor Beal of this college,

dated August 24, 1875 and December 31, 1877, as well as a letter of his February 6, 1914, explanatory of the second letter. Will you please return these to me when you are through with them.

From the Michigan end I can explain, perhaps, the circumstances which brought forth the letters from my father. Prof. W. J. Beal became professor of botany here in 1870 continuing until 1910. For the first ten years his department included horticulture and forestry as well. In fact it was not until 1900 that a separate forestry department was established. Horticulture was separated off under Bailey in 1882. Both for the Centennial Exposition and the World's Fair in Chicago in 1893 Dr. Beal prepared exhibits of Michigan woods. It is clear that my father's letter of 1875 was in answer for information how my father was going to prepare an exhibit for the Centennial Exposition.

My father studied botany here at Michigan State College, under Prentiss. Prentiss left to accept a position at Cornell at the time my father graduated here in November, 1869, and Dr. Beal did not come to this college as professor until the summer of 1870, so that my father never studied under Dr. Beal. Dr. Welch called on my father here at this college in December, 1869, and early in January, 1870, my father received notice that he was appointed instructor in botany and horticulture at Ames at the enormous salary of \$1,200 a year. He began services there at the opening of the school year about February 1, 1870. As my father remembered it, it was not until the second school year, beginning February 1871, that he began using the laboratory method for his junior classes. A small room in the old main building at Ames, in reality the end of the hall cut off by a temporary partition, was used for this purpose. It was fitted up with tables and shelves and had to start with one microscope but later on obtained more. He nailed on the door a notice "Botanical Laboratory," and this created great amusement among other members of the faculty for they said that only chemistry could be taught in the laboratory. For the students before the junior year no laboratory work was undertaken with a compound microscope at that time, but the classes actually did laboratory work though not by that name, at each meeting of the class.

Dr. Beal who came here in 1870 was not satisfied long with the method of teaching botany by merely reciting lessons from a textbook and he also started a laboratory at this college. The exact dates I have never been able to ascertain, but from things said here I think it was also before 1875. By 1877 he was getting ready to have a building erected for botany and it was doubtless this that led him to write the letter which elicited my father's letter of December 31, 1877.

Dr. C. E. Bessey wrote a letter to his son, Dr. Earnest A. Bessey, sending him two old letters with reference to the laboratory work given at Ames and in this letter he describes the laboratory table which he designed, a table now quite commonly used in many of the best botanical laboratories of the country.

And a letter from Dr. C. E. Bessey to his son, Dr. E. A. Bessey, February 6, 1914:

I am herewith enclosing the two old letters which you were so kind as to send me. I have had typewritten copies made of them and have also had one of my assistants make crude copies of my drawings.

As I look over the old letter, especially the one discussing laboratories, I am impressed with the fact that a wonderful advance has been made in botanical teaching. You must remember in reading the letter that the admission to the freshman class at Ames was very much lower than it is at the present time. A freshman then would be about equal to a pupil in the second or third year of an ordinary high school so that what I gave the students in the freshman and sophomore years was practically what they should have had in a preparatory department.

Letter from Dr. C. E. Bessey to Dr. W. J. Beal, December 31, 1877:

I answer most emphatically **yes**. A college which proposes to keep up with the current must provide botanical and zoological laboratories. The college which does not provide such laboratories will fall behind the progressive institutions, at least so far as the biological sciences are concerned. A botanical laboratory is just as necessary for the proper teaching of botany, as is a chemical laboratory for chemistry.

I will send you as soon as it is published (in 2-3 weeks) a rep't in which my laboratory plans are briefly indicated.

The **laboratory** is much more important than the botanical museum—unless the latter is an **adjunct** of the former. I would give about ten cents for the museum alone, but the museum as a **part of the laboratory** I consider **absolutely indispensable**.

I do not believe at all in the idea of an old fashioned museum of whatever kind, as connected with a college. A collection ought and should have the same relation to the laboratory, that the chemicals of all kinds in the chemical store room have to the chemical laboratory. I have come to regard specimens in a college museum as valuable to students only in so far as they are used, and perhaps **worn out**. Museum specimens like books are made to be used—and use will inevitably wear them out.

As to plans and cost.

First I must say that I think you have made a **great mistake**

in breaking in upon the consecutiveness of the old course in botany, I really do not see how you can "put in" the most profitable laboratory work. Your freshman students are too raw and awkward, and your seniors will feel that it is a pretty late time to begin training them. I confess to not knowing how to meet the problem in your case. It seems to me that the senior "six weeks of botany" as I find it in the last catalogue, is in the most ridiculous of places. Be that as it may, however: and I trust that you will pardon my plain speaking. It is best that when we criticise we do so in such a way as not to be misunderstood. Criticism, I take it, is most valuable when clear cut.

Well, now, as to plans. I will take the arrangement as I have it here at Ames.

1. Freshmen, 2d half yr. Elementary Botany, with study of crude (exterior) anatomy of plants. Class meets twice a week. No special laboratory necessary although one could be used.

2. Sophomores, 1st half yr. Structure and classification. Analysis of plants: collection, and making of herbarium. Class meets twice a week. Should have a laboratory with tables. Will get as soon as I can "make it," a room large enough to accommodate all the class (about 50) at once. Every student now supplied himself with a simple brass three legged microscope which answers very well for a dissecting instrument. (Cost 75 cts. Magnifying power 9 diam.) Also with needle points and knife.

When I get my laboratory it is my purpose to have each pupil supply his own microscope, like the one above, but we may provide scalpels and fine forceps.

My plan is to have tables of the shape indicated in this rough diagram to seat five students at each.

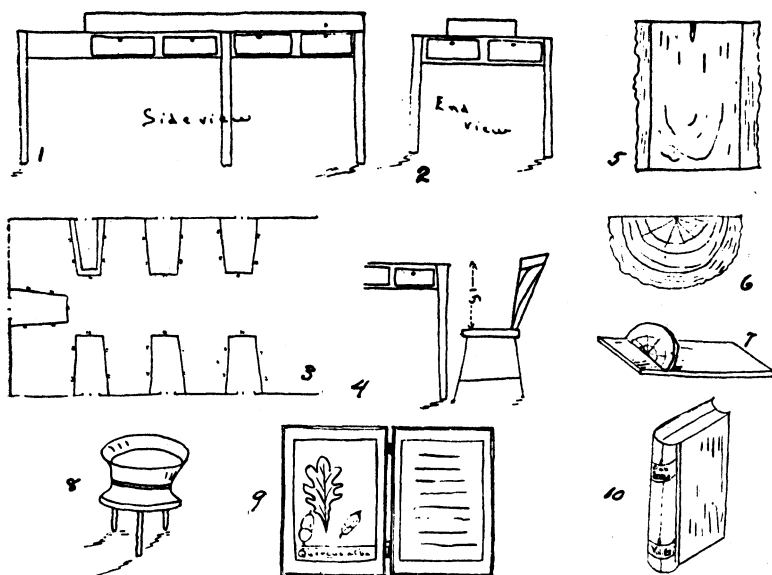
I should run a low shelf (3 in. high) eighteen inches from each edge, or if the windows are wide enough a higher partition down the middle of the table. The tables to be 32 or 33 in. high, and the distance from top of chair-seat to top of table 15 in.

Now all this **I want**, but have not secured as yet. I get along by using the class room. I growl about it, of course, and am promised better things before long.

The expense you see will not be great. My trouble now is want of a suitable room for it.

3d. Sophomores, 2d half year. Economic Botany. Class meets twice a week. They also continue to analyze and classify. When I get my laboratory I will put them into it. Now I use class room.

4th. Juniors, 1st half year, 4 times a week. Beg. Physiology and Crpt. Bot. All spend one afternoon a week (three



From original drawings made by Dr. C. E. Bessey. Figures 1, 2, 3 and 4, laboratory tables designed by him and in common use in many laboratories of this country. Figures 5, 6, 7, 9 and 10, illustrating the woods exhibited at the centennial exposition. Fig. 8, drawing of microscope used in his laboratory.

hours) in the Physiological Lab., which is fitted up with tables and microscopes for ten students. I use now ordinary tables, and provide for each pupil. One compound microscope 1 inch and $\frac{1}{4}$ inch obj., one good scalpel, one pr. fine forceps, needle points, reagents.

The whole outfit for each student costs from 50 to 60 dollars. On shelves in the lab. I keep the material to be used, and such extra reagents as are only occasionally used. I preserve specimens for examination in alcohol, and find them perfectly satisfactory.

For ordinary tissues I know of nothing better than pumpkin vine taken at maturity, though still green. For the study of protoplasm I use young roots (2 or 3 days old) of Indian corn. For pollen-mother-cells, and the development of pollen grains I use young flower buds of lilac.

Beck's Economic Microscope does very well for a laboratory instrument where cheapness is absolutely necessary.

I bought five for about \$35 apiece by getting them **duty free**. They will cost less now. Hereafter I will buy a better grade of instruments.

Pardon my long letter, and believe me

Yours very truly,

(Signed) C. E. BESSEY.

Dr. Bessey was responsible for some "firsts," one of these I have called attention to, the introduction of laboratory work in botany. He was one of the pioneer plant pathologists of this country.

He took part in one of the first farmers' institutes, January 12, 1871, held in Iowa, and for that fact in this country. These meetings were held at Cedar Falls, Council Bluffs, Muscatine, and Washington. Prof. I. P. Roberts has given us an interesting account of this type of work. It is interesting to note in this connection that Peter Malendy, at a meeting of the State Agricultural society in Des Moines in 1871 introduced a resolution requesting the state college of agricultural and mechanical arts to take up this line of work. In this connection, too, it is interesting to note that Dr. Bessey was interested in bees for I find in the report of the State Agricultural society for 1872 a report of Dr. C. E. Bessey's as assistant secretary for the Bee Keepers' association.

Dr. D. S. Fairchild, one of the able members of the early faculty of Iowa State college, said that Dr. Bessey was strongly imbued with the idea of laboratory work and he tells us in this interesting sketch:

"In his room we had many conversations as to the future of the college and he showed me his laboratory equipment,

which consisted of one microscope, a Zentmeyer, and a few home-made slides. It is not strange that the professor should feel that laboratory work in botany was a long way off. It was two or three years later that he began to think about bringing the men of scientific thought together, thus forming an Iowa Academy of Science."

There were splendid textbooks on general morphology of plants by Dr. Asa Gray and others, but nothing quite like the work of Julius Sachs textbook of botany. There was need of something in this country modelled after Sachs, and Dr. Bessey brought it out in his textbook, "Botany for High Schools and Colleges." He says:

"That in the preparation for the work there has been kept in view the wants of the large number, in the schools and out, who wish to obtain, as a branch of a liberal culture, a general knowledge of the structure of plants, with some idea as to their classification into the larger divisions and subdivisions of the vegetable kingdom. For this class of students and general readers, what is here given will in most cases be amply sufficient to enable anyone to understand the greater part of the current biological literature, insofar as it relates to vegetable organisms."

He has made acknowledgement of the work from which material was used, De Bary, Hofmeister and Strasburger, and that excellent book, Sachs' textbook, and then the full acknowledgment to his teachers and fellows:

"I desire here to acknowledge my indebtedness to Dr. Asa Gray, whom it is an honor to own as my sometime teacher, for kindly aid and counsel in the preparation of the lectures upon which this work is based; and in the same way I am indebted to G. L. Goodale, Dr. W. G. Farlow and Prof. A. N. Prentiss."

Dr. Fairchild makes this comment: "Professor Bessey early made valuable contributions in botany and was much admired by President Gilman of Johns Hopkins university, who secured for Professor Bessey a winter course of lectures at the University of California. The long vacation at Ames at that time was from November to March, which enabled the professor to secure the winter period for work and study. President Gilman was an inspiration to Professor Bessey, which largely contributed to the preparation of his work on botany, which was adopted in many colleges as a textbook. Professor Bessey had but one thought, and that was botany, and incidentally, the training of young men and young women in scientific methods of thinking."

Dr. Raymond Pool, in the American Journal of Botany (2:505) has given us an interesting sidelight on his work in the University of California. "Early in the year 1874, at the sug-

gestion of Dr. Gray, President Gilman of the University of California wrote to Professor Bessey asking him to give his views in regard to certain problems relating to agricultural education, then demanding solution. His reply, along with those from Louis Agassiz, Andrew D. White, Samuel W. Johnson and others, was printed in a bulletin issued in the spring of 1874 by the University of California, under the title "Recent Information Respecting Agricultural Education Elsewhere." This correspondence led to an invitation from President Gilman to Professor Bessey to go to California to give a series of botanical lectures." The following winter Dr. Bessey gave a series of lectures on botany, as a temporary appointment.

The Bessey textbook gave him a reputation far beyond the confines of Iowa. I recall an interesting incident: A student of botany in St. Louis, a Mrs. Wislizenus, said to me when I was elected to the professorship of botany at Ames, "Why are you going to fill the chair of botany where the celebrated Bessey taught" I replied, "I hope I will succeed because Dr. Bessey is a great man. I will need a lot of support."

In the earliest biennial report of the college botany was put down as one of the required subjects in the sophomore year. No doubt this was on the suggestion of the persons who laid the foundations of this institution. The biennial report of the college gives a fairly good history of the subject as it has been taught in this institution from the beginning. In the third biennial report of the college and farm made to the governor of the state, Dr. N. S. Townsend gave an outline of the courses.

Dr. Bessey in his report for 1872 and 1873 was still the professor of zoology and horticulture and botany, and there are courses given in these subjects, and he notes that the department of comparative anatomy and physiology was put on its present footing during the year. Four hundred and fifteen dollars was the entire sum needed to carry on the work in the department of botany, zoology, entomology, comparative anatomy and physiology. It is interesting to compare the work of these pioneer days and the work today. Iowa was still a pioneer state. We were making homes and carving a new agricultural commonwealth. In these biennial reports Dr. Bessey ever kept in mind the economic phases of botany, for instance in the report for 1872-73 he called attention to the diseases of wheat like bunt, corn smut and loose smut on wheat. He also called attention to the experimental work in connection with the growing of crop plants.

These courses were somewhat altered. He gives an outline of these in the biennial report for 1875, and then we may note that in 1877 (seventh biennial report), Dr. Bessey was still professor of botany, zoology and entomology, and under the head

of biology and botany gives an account of the instruction given in botany, such as elementary, systematic, economic, cryptogamic, vegetable physiology, animal physiology, general zoology, entomology, and comparative anatomy, and it should be remembered that Dr. Bessey did all the work. He had no regular assistant.

Among the papers presented in this report was one on the injurious fungi, the blight, and one on the Orthoptera of Iowa, that is, the crickets and grasshoppers. Of interest in this connection is his mention of the Rocky mountain locust found in great numbers on the college farm in 1877.

The courses given in 1879 were for the freshman year, elementary botany; in the sophomore year, systematic botany and economic botany; in the junior year, vegetable physiology. At this early day the civil engineers also had a course in elementary botany. There was a Ladies' course. These students received instruction in elementary and economic botany. Dr. Bessey was a special member of this faculty as well as the course in science related to agriculture of which Dr. S. A. Knapp was the chairman. These students were given courses in elementary, vegetable physiology and economic botany. The botany in the science course was much the same except that vegetable anatomy was taught. In 1880 he introduced the word biology in the science course which included courses in elementary botany, vegetable physiology and anatomy, systematic botany, under which he discussed principles of classification, importance of timber trees, weeds, medical botany. The courses did not change very much for 1880, 1882 and 1883. In 1883 there were 168 students in botany and he had to take care of all of these himself. Landscape gardening became a part of the curriculum of the botany department. He notes that two teachers, one from Indiana and one from Minnesota came for courses in botany, and hoped that the coming of such students might be an encouragement for other students to come from a distance to Iowa State college.

Graduate courses, in spite of the very able faculty, did not make much headway. One of the earliest students to receive an advanced degree was Dr. J. C. Arthur, who was given the M. S. degree. He was also the first assistant in botany at Iowa State college. The board of trustees of Iowa Agricultural college in December, 1876, authorized the giving of advanced degrees. The faculty consisted of Dr. A. S. Welch, psychology; Dr. C. E. Bessey, botany; W. H. Wynn, English literature; Dr. M. Stalker, veterinary science; A. Thompson, applied mechanics; T. E. Pope, chemistry; J. K. Macomber, physics; E. W. Stanton, mathematics and political economy; and J. L. Budd, horticulture. The graduate school at Iowa

State college dates from the impetus given it by men like Drs. Bessey, Welch and Pope.

Dr. Bessey first gave instruction in botany in the old main building. The quarters though sufficient at first became cramped and in 1880 or 1881 the botanical department was moved in the old North Hall. Dr. Bessey notes this in the biennial report for 1880 and 1881. He had ample room. There was the large lecture room with seats rising to the rear, seating capacity for one hundred students, a laboratory some twenty-four feet long with windows on the north side, an advanced laboratory on the south, which contained the herbarium on the north wall. This room had the physiological and other equipment. There was an office cut off from this room. The laboratory walls were covered with specimen charts, the work of one of his students, Dr. J. C. Arthur, and splendid charts they were. Dr. Bessey in moving into this building notes the acquisition of herbarium cases and plants purchased from the southern states and Arizona. Then there were a good many fungi. The collection in 1884 numbered about 15,000 specimens.

Exhibit at Centennial Exposition

Dr. C. E. Bessey was very much interested in the exhibition made at the Centennial Exposition. Under his direction a set of woods representing the tree flora of the state of Iowa was prepared. Also a collection of plants representing Iowa flora was prepared by Dr. J. C. Arthur. This collection now is at Tabor College. This splendid collection represented the most complete exhibition of flora of the state that has ever been made at an exhibition. The following is a letter to Dr. W. J. Beal in regard to the collection of woods:

College of Agriculture, Ames, Iowa,
August 24, 1875.

My dear Sir:

The Iowa woods will be represented as follows: 1st Botanical Collection.

Blocks of wood are made in book form, size 8 inches long, 5½ wide and 2 thick.

These are cut into two equal halves so that each "book" opens out, and each is then hollowed out on its inner surface.

In these cavities specimens of leaf, fruit, etc., are placed. A written or printed slip is also inserted giving such facts as are of importance.

2d The "Show Collection," which is more for the glorification of the American Eagle, and for impressing "ignorant foreigners" with the wonders of our "great country"—

A plank "as large as possible" is cut from the biggest tree in the state (so as to get a good average!) the bark is left on.

Then to this is added a cross section as shown in figure which is glued to the plank, in something as shown in figure—

Both methods have their advantages and disadvantages, so by combining them, a pretty good thing will be made in the way of representing the woods.

I learn that you had a good meeting at Detroit. Was sorry not to have been present, but couldn't.

Scientific and Popular Treatises

His scientific work covered a wide range of subjects, critical reviews, popular treatises, textbooks and papers, the result of research work, *Elementary Botanical Science*, 1892; the *Phylogeny and Taxonomy of Angiosperms*, 1897; *Elementary Botany*, 1904; *Plant Migration Studies*, 1905; *Outline of Plant Phyla*, 1907; *Synopsis of Plant Phyla*, 1909; edited McNab's *Morphology, Physiology and Classification of Plants*, 1881; author *Geography of Iowa*, botany for high schools and colleges, 1884, the celebrated textbook of botany. Dr. Bessey stood so well among the botanists of the country that his name was starred in Cattell's *American Men of Science*.

Other of his works were, *The Forests, Grasses and Flowers of the Great Plains and Conditions Which Govern Their Distribution*, *The Relationship of the Nut Families*, *The Bull Pine*, *Plant Migration*, and with these, as a co-author of *New Elementary Agriculture*.

He was often helpful to young students; he gave freely of his time. Dr. C. H. Kaufmann in his work on *Agaricaceae* acknowledges the help received from Dr. C. E. Bessey in this fine monograph. I recall when I came to Ames, he was glad to help me in many ways. He suggested to the committee arranging the programs for the Indianapolis meeting of the *American Association for the Advancement of Science*, my name to prepare a paper on the water requirements of plants. I know it gave me a fine opportunity to do some research work. He put himself out to help me and all other young botanists.

In the fourth biennial report of the Iowa State college and farm made to the governor of Iowa through Dr. Welch, Dr. C. E. Bessey gives an account of the insects affecting certain plants as well as a brief account of some of the experiments made with potatoes and other economic plants, and also under the head of "Botany" he published a catalog of plants under the title "*Contributions to the Flora of Iowa*," and notes that he is under obligation to J. C. Arthur of the junior class and certain other persons like Professor Carpenter of Indianola, Professor McClain of Fayette, Professor Parker of Grinnell, and the Rev.

Isaih Reed of Nevada. This catalog of some 37 pages lists the weeds and common plants of the region of Iowa, and this is one of the best of the earlier floras of the state.

One of the earliest articles by Dr. Bessey on the flora of Iowa was published in the *Aurora*, October, 1873. This very interesting statement appeared in the article:

"In the first place, it may be remarked that the vegetation of the state is essentially eastern in its type, with of course certain modifications due to differences in climate. The botanists from the eastern states will find much the larger number of specimens here to be familiar to him and only now and then will he find a plant which may be emphatically western."

Then Dr. Bessey refers to the report he made on the flora of Iowa in 1871. He judges that the total number of flowering plants would reach 1200 or 1300 in the state. Mosses, liverworts, and lichens bring 200 more. Fungi and fresh water algae will add 1000 more, making a total of 2500 species for the state. Of course, Dr. Bessey way under-estimated the number of plants found in this state.

Mention is made of the *Nelumbo*. He noted the abundance of the *Cleome*. Other interesting facts are brought out in this paper.

Dr. C. E. Bessey for many years was the botanical editor of the *American Naturalist*. Many subjects engaged his attention. He made reviews of a great many botanical papers, and these reviews were often quite critical. The papers reviewed touched on all phases of botany and they showed the breadth of Dr. Bessey's knowledge of botanical science. In going through the *American Naturalist* I find there are splendid reviews of papers by A. A. Crozier, at one time botanist of the Iowa Agricultural Experiment Station, on "Botanical Terms." He discussed splendidly such subjects as the nomenclature question, and later the code of the Vienna Botanical Congress, under the head of "Vienna Propositions." Such subjects as parasitic fungi, *Caeoma nitens*, Hough's *American Woods*, Seymour and Earle on *Economic Fungi*, Hitchcock's paper on the Plants of the Bahamas, Water Molds by J. E. Humphrey, were reviewed as well as the Russian thistle, such floristic papers as Kellerman's *Flora of Ohio*, J. M. Coulter's *Texas Flora*, Rydberg's *Flora of the Sand Hills of Nebraska*, received his critical studies.

Dr. Bessey often made critical remarks. In one case that is of particular interest, is the review of the book "*Wild Flowers of America*," published by a New York firm. This is what he said: "When Dr. Goodale and Isaac Sprague gave to the world, a dozen or more years ago, that magnificent work entitled '*The Wild Flowers of America*,' no one then supposed

that within a few years the title would be disgraced by such a work as we have now before us."

Dr. Bessey reviewed critically Willis' practical flora, which was rather amateurish he thought and not a critical study. The reviews in Science were less frequent than in the American Naturalist. I recall a review by Dr. Bessey of L. H. Bailey's address on the survival of the unlike, in which Bessey made the statement, "Whatever Bailey writes is interesting; he has a rare gift of an entertaining style."

He presented papers at many of the meetings of the Iowa Academy, Nebraska Academy, the American Association for the Advancement of Science, and other organizations. The papers were always thorough and well thought out, and therefore real contributions to the science of botany.

The reviews of books frequently contain suggestions of his own. In one case he called attention to the poison from the poison ivy, and he was of the opinion that there must be something in addition to the volatile oil discovered by Dr. Paff of Harvard University. In these reviews he gave valuable suggestions, one of these a statement about the climbing of the Virginia creeper, and the fact that it did not climb over painted walls.

In a Bulletin of the Department of Botany, the last of his scientific papers at Ames, Ia., dated November 3, 1884, he said the purpose of the report was to give the people of this state an idea of the nature of the observations which were made at Ames and the studies carried on in the Department of Botany of the college. Part I of this bulletin is devoted to some of the harmful plants like Rattlebox, the porcupine grass, wheat smut, the smut of Indian corn, and ergot. Part II contains preliminary lists of cryptograms, slime moulds, bacteria, algae, the powdery mildews and other sac fungi, the rusts and smuts (based on Arthur's list), toadstools and puff balls.

Dr. C. E. Bessey took a great interest in forestry for Nebraska. He did much for the establishment of the Nebraska National Forest. The sand hills of Nebraska, because of the interesting plant life always made an appeal to him. Nebraska, like Iowa and some other prairie states, hoped to benefit by the national timber act. The trees used in many cases were unsuited for these prairie states. Some trees like the cottonwood grew and did well. Dr. Bessey argued for the planting of certain evergreens. He had studied the ecological aspects of the region, and was convinced that Scotch and Austrian pines would succeed; therefore, in 1891, the federal government established a plantation on the ranch of Bruner brothers in Holt county. In 1902 the government planted 70,000 Jack

pine seedlings and 30,000 seedlings of yellow pine on the Bessey division of the newly created Nebraska National Forest. These trees have done remarkably well. The Bessey National Forest has an area of 90,100 acres, and between 1903 and 1926 has produced 23,000,000 trees. It is fitting, therefore, that a part of this national forest should commemorate Dr. C. E. Bessey, who was deeply interested in forestry. The silver anniversary of the Nebraska National Forest was celebrated on June 4th and 5th, 1927.

Dr. Bessey exerted a large influence on the botany of this country from the time he came to Ames until he died at Lincoln, Nebr. He was a popular lecturer and was well liked, not only by the laity but by his scientific associates. They looked to him with esteem and affection.