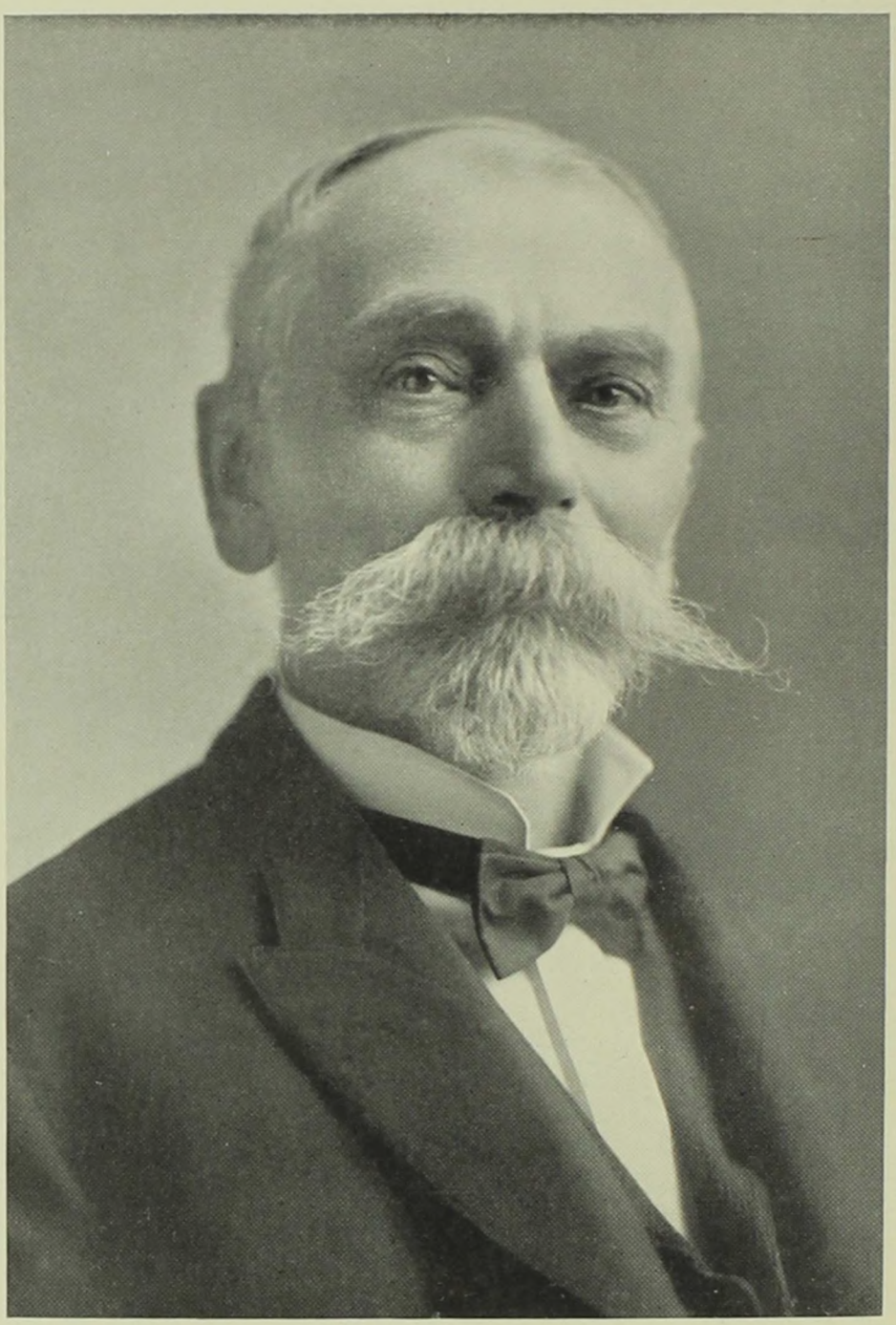

GUSTAVUS DETLEF HINRICHS

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Gustavus Detlef Hinrichs

Gustavus Detlef Hinrichs was one of the ablest scientists connected with the University of Iowa in its early years, and probably as versatile a man as American science has produced.

Born on December 2, 1836, at Lunden, Holstein, then a province of Denmark but now included in Germany, he went north to Copenhagen for study at the age of seventeen and, early in 1860, he passed, with the mark "excellent", the examinations required by the University of Copenhagen for qualification as a teacher in the higher scientific schools. At about this time the national antagonisms in that part of Europe were breaking out anew and, like many other able young men of that time, he decided to emigrate to America. Before leaving Denmark, in April, 1861, he married Auguste Springer of his native province of Holstein. She died in 1865. Two years later he married her sister, Anna Springer.

For a time after coming to America, Hinrichs taught in a city high school, and then, in 1862 when the University of Iowa was looking for a man to head the new department of Modern Languages, he secured the position. He was, no doubt, well qualified for the position, but his training and interest were in the physical sciences, and the following year he became Professor of Natural Philosophy, Chemistry, and Modern Languages. In 1864, the University secured another man for the language work, so that Hinrichs was able to devote all of his efforts to natural philosophy and chemistry. For five years he continued in this position and then became Professor of Physical Science. In 1871 his title was changed to Professor of Physical Science and Director of the Laboratory, which title he held until he left the University.

Professor Hinrichs was a pioneer in developing the laboratory method of teaching science. About 1870, the University of Iowa was listed by an eastern professor as having one of the four leading science laboratories in America. For this type of teaching it was then necessary to write new textbooks. In 1870 and during the years immediately following, Professor Hinrichs published several texts for use in his science classes. For the main course he used a two-volume book — Volume I being *Elements of Physics* and Volume II the *Elements of Chemistry and Mineralogy*. Other books and pamphlets included *Principles of Pure Crystallography,*

School Laboratory of Physical Science, Principles of Chemistry and Molecular Mechanics, and *First Course in Qualitative Chemical Analysis*. The development of laboratory work in the physical sciences under Professor Hinrichs at Iowa attracted favorable attention not only from other American universities but also in Europe.

Professor Hinrichs was very much interested in meteorology, and in 1875 founded the first State weather and crop service in the United States. He obtained from the State of Iowa appropriations sufficient to buy the necessary instruments for the director and the volunteer observers over the State, but it was necessary for both director and observers to work without salary. Professor Hinrichs directed the Iowa Weather Service from 1875 until he left the State in 1889.

In February, 1875, one of the great meteors of modern times burst over the Amana colonies, some twenty miles west of Iowa City. Hinrichs was one of the very first, and the most active, of the scientists investigating this meteoric fall. He succeeded in obtaining most of the meteorites for distribution to the great museums of the world, and later he published books and articles in French, German, and English on the Amana meteorites. Nor did he lose interest in meteoric phenomena, but was the first to investigate and publish a description of the Estherville meteor of 1879 and less important falls in 1892 and 1894.

In 1885 and 1886 there occurred at the University of Iowa one of those unpleasant incidents which happen now and then in university circles. Departmental rivalry, colored by jealousy, involved Professor Hinrichs in a bitter controversy with President Pickard and other members of the faculty. Hinrichs was dismissed from the Collegiate Faculty in June, 1885, and a year later he was asked to resign from the Medical and Pharmacy staff on account of alleged misconduct as a consulting chemist.

For three years following his resignation he occupied himself with research problems on molecular mechanics and atomic weight, producing a remarkable number of papers most of which were published in *Comptes Rendus* of the Academy of Science of Paris. Articles also appeared in the British journal, *Nature*, in the *Proceedings* of the American Association for the Advancement of Science, and in German publications. Twenty-one articles were published during 1891 in the foreign periodicals.

In 1889, Hinrichs was selected Professor of Chemistry in the College of Pharmacy of St. Louis University, and he retained his connections with that school until his permanent retirement from teaching in 1907 at the age of seventy-one. He continued his research work for a few years longer, however, publishing regularly each year, until his last article, "True Atomic Weight of Bromine," appeared in 1913. He died at his home in St. Louis on February 14, 1923, in his eighty-seventh year.

In looking over the record of Professor Hinrichs, one notices at once the great number of years covered by his research activities. His first publication, a small book of seventy pages, appeared in Hamburg in 1856. Four years later four articles were published and, beginning in 1864, the year in which the University of Iowa relieved him of the language work, articles, usually several, were printed almost every year, to the conclusion of his research activity in 1913. The complete list includes some three hundred publications, twenty-five of which would be called books, and his contributions to knowledge cover a period of fifty-seven years. Although born in Germany, educated in Denmark, and a resident of America, Professor Hinrichs showed a marked preference for the French research journals. For example, during the years from 1891 to 1893 inclusive, twenty-four articles appeared in the French *Comptes Rendus*, written in French. Eight articles were written in German for German periodicals, and three were written in English for British technical journals. During that period he published no articles in the American technical journals, but did present eight papers at the meetings of the American Association for the Advancement of Science, and abstracts of these appeared in the *Proceedings* of the Association. As another illustration of his preference for European publication, the articles on the Amana meteorites may be cited. Four of these were published in

Comptes Rendus, and one additional in another French journal. A pamphlet, or small book, was published in the German language in Germany. An article of a rather popular nature appeared in the *Popular Science Monthly* published in New York City. A small pamphlet was published at Iowa City in 1875, and a booklet of 104 pages was published in St. Louis in 1905.

The reason for this habit of European publication appears to be that Hinrichs was offended when the editors of one of the leading American journals used a blue pencil on some of his early articles and did not publish them as promptly as he desired. Many of the American technical journals have a habit of submitting nearly all papers to a referee — supposedly one of the best authorities in the field in which the paper is written. This naturally delays the publication of the paper to some extent, and the referee frequently suggests minor changes. Most scientific writers are not offended by such procedure — in fact they often welcome the suggested changes as improvements.

Professor Hinrichs, however, was very sensitive about his scientific reputation, especially since his views on important points were in conflict with some of the other prominent American chemists, though the opinions of leading French chemists coincided with his own. He also suspected that some of the changes implied that he was not expert in the use of the English language, which was not his native

tongue. But whatever the reasons may have been, he practically discontinued publication in American journals and sent his scientific articles to European technical journals. The editors of *Comptes Rendus,* being in sympathy with his viewpoint, saw to it that his articles were published promptly and without change. This circumstance may account for the supposition that Hinrichs was more famous in Europe than in America, though his scientific reputation in America was beyond reproach.

Doubtless, however, the foreign publication actually prevented some of his work from being known as well as it should have been. For example, Professor Hinrichs announced the fall of the Amana meteor in *Comptes Rendus* and followed up the announcement with other articles in French journals. His only contemporary accounts published in America were an article in *Popular Science Monthly* and a privately printed pamphlet published in Iowa City. This meant that his work was not well known in America, and there was much confusion as to the location of this important meteoric fall.

Foreign writers naturally sought in American journals for accurate information on a meteoric fall occurring in America, and so Professor Hinrichs's notes in the French journals were overlooked by many European writers. Had he contributed a few articles to the leading American journals immediately after the fall, much of the confusion and error would probably have been avoided.

A similar habit, due no doubt to his desire for perfect freedom in writing, was the private publication of his books and pamphlets. In his later years most of his books were published by his son, Carl G. Hinrichs, of St. Louis, Missouri.

The most striking feature, however, is the versatility of the man. He came to Iowa as a Professor of Modern Languages and was transferred to work in the Physical Sciences. His publications include at least five distinct fields of science. He prepared articles on astronomical subjects, such as "Inclination of Planetary Orbits to the Invariable Plane". His papers on meteors and meteorites include astronomical and geological work. He published a text-book on physics, and certain articles on terrestrial magnetism would be classified as work in that field. He wrote numerous papers on meteorology, most of them published in the twelve-year period during which he was the head of the Iowa State Weather Service. His text-book on mineralogy and research articles on crystallography caused a writer in a mineralogical magazine to rate him as one of the foremost crystallographic men in America in his day.

Professor Hinrichs's favorite branch of science, however, was physical chemistry, and his greatest contributions to knowledge were made in the field of molecular mechanics and atomic weights. It was for this work that American chemists gave his name a star in the first edition of *American Men of*

Science in 1906, a distinction accorded to him in succeeding editions as long as he lived.

His first papers on "Atomechanics" appeared in 1867, and his publications in that subject appeared regularly until the end of his research activity, nearly half a century later. Much of his work on the atom was directed toward the demonstration of the "Unity of Matter". In this, as in much other work, he was distinctly a pioneer; and the modern practice of reducing the atoms of all elements to electrons and protons shows that he was correct in his fundamental assumption of the essential similarity of all matter.

CHARLES CLAYTON WYLIE