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THE ELECTRICAL EXHIBIT

Display by the Electrical Department Last Night—Armory Filled With Wonderful and Beautiful Creations.

If the old alumni of the electrical engineering department could have seen the search light flashing down Eleventh street last night, many a pleasant recollection of former char'er day exhibits would have come to his mind. The brilliantly lighted gymnasium appeared just as in former years except for the west extension, and as before, quickly attracted the visitors as they reached the campus.

During a selection from the university cadet band, the Jablochkopf candles "commenced firing," and thus opened the exhibit. Then various pyrotechnics were displayed in the shape of rainbows and pin wheels, with changing colors. Two wheels of incandescent lamps were revolved in such a way as to make the lamps appear to strike each other and rebound. An electric sign made up of ragged lightning under a pressure of 30,000 volts indicated the popularity of "Bennie."

The evolution of the electric lamp was shown by samples of the early, crude contrivances, various brands of modern incandescent lamps, and finally the Nernst lamp, which has reached the highest degree of perfection among lighting apparatus.

A kinetoscope displaying a skeleton alternately removing and replacing his skull, and committing various other hair-raising antics furnished great amusement.

Wireless telegraphy was explained and messages sent through the brick wall between the chapel and the armory.

In order that the visitors might have a more tangible remembrance of the exhibit E. E. pins were plated and distributed to the crowd.

WIRELESS TELEGRAPHY AND HERTZ WAVES.

The history of electrical engineering is largely the history of the physical laboratory. Beautiful things come to light under the hand of the physicist. They grow and develope like children, but ere they have reached maturity they are seized upon by the electrical engineer, to be trained and strengthened and set to hard labor until their full measure of strength has been acquired. The matured device is like a strong man, wonderful to behold, doing its daily share of the world's work, but it has lost much of the delicacy and beauty of its early days. I have to speak to you today of such an evolution. But, unlike most of the applications of science, fully as much of the credit for the development of the Marçoni system of telegraphy is due to the mathematical department of science as to the physical. Without the keenest and most powerful mathematical tools, in the hands of such an one as Clerk Maxwell, the principles upon which the Marconi system depend would probably not have been discovered at all. Were it not for the wonderful labors of the older and wiser men who preceded him, Marconi, a youth of twenty-two, would never have succeeded in sending a single wireless message. But before taking up the Marconi system, let me refer to some early experiments in wireless telegraphy involving other principles.

Early in the days of the first ordinary telegraph, Samuel F. B. Morse telegraphed across the Susquehanna river at a point where the stream was about a mile wide. This was accomplished by sinking in the river two large metallic plates upon the same side of the river, one down the bank below the other a distance equal to the distance across or somewhat greater. These plates were connected together by a wire in which was inserted a powerful battery along with a regular telegraphic key. On the other side of the river were two exactly similar plates, conected in the same way, but including in the circuit only a telegraphic sounder. With this arrangement signals were easily sent across the river. The system devised by Professor Morse was the prototype of a number which have since been rediscovered and successfully applied.

With the advent of the telephone receiver a new and powerful instrument was placed in the hands of the electrician. The telephone receiver is most delicate and will register with an audible click the passage of a current too small to be noted by any save the best of galvanometers. Another and well known system of wireless telegraphy employs the telephone receiver. Consider for a moment such

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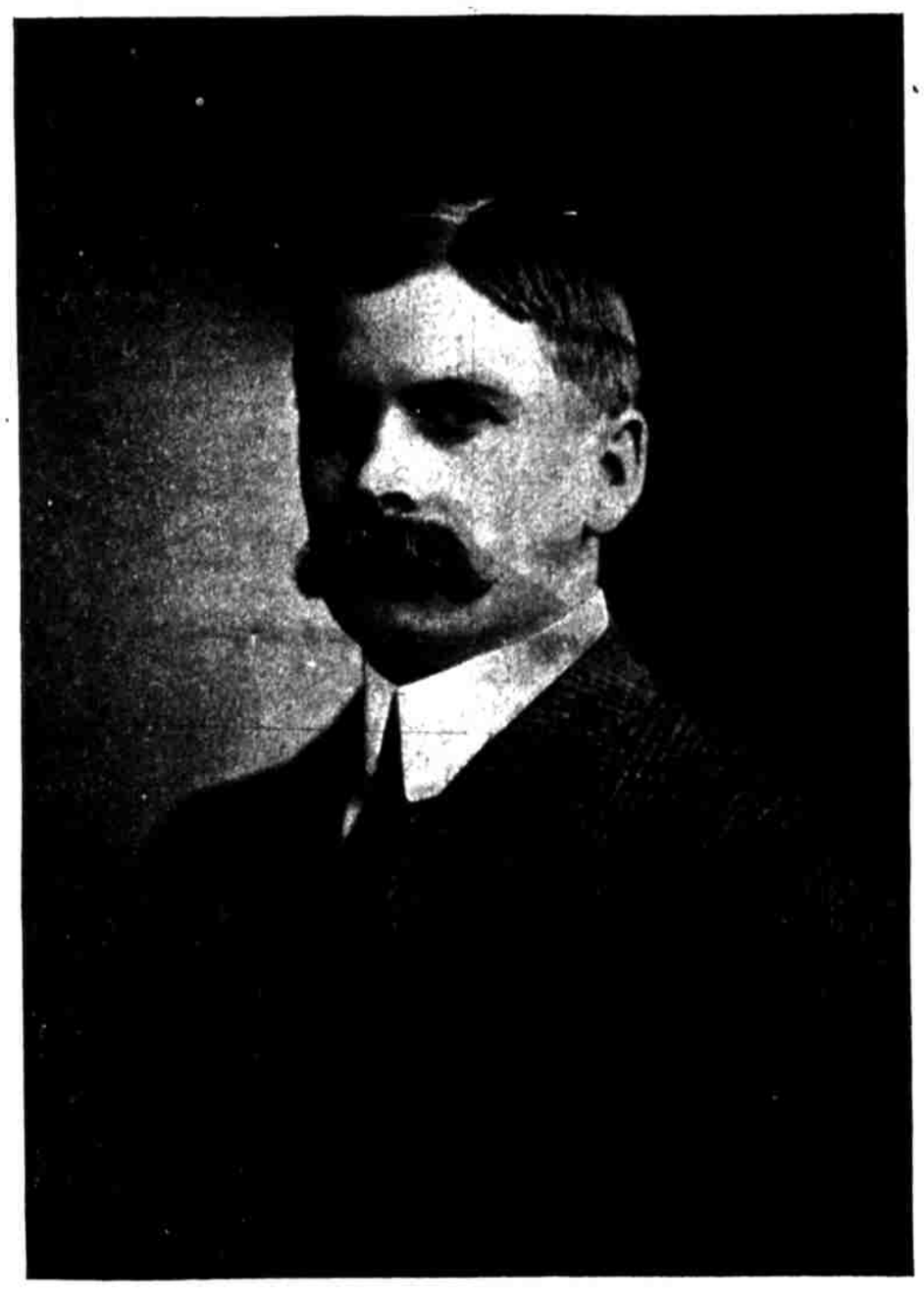
BION J. ARNOLD

One of the Foremost Electrical Engineers in America—Formerly Student and Lecturer in the University.

To be a successful engineer not only requires great preparation, but also natural inventive and constructive genius. Then one must possess that force of character that impresses others with the possibility of the ultimate success of his projects, and be tenacious enough to carry through plans that may meet with opposition from others who are unable to see the ultimate results of correct solutions of engineering problems. That Bion J. Arnold possesses all those necessary qualifications which go to make a successful engineer has been demonstrated by his career, and though still a young man, he stands at the head of his profession, and his ability is generally recognized throughout the engineering world. It has been his most striking characteristic to keep in advance of his profession, and in doing this he has frequently encountered strenuous opposition which, upon the successful demonstration of his theories, has been turned into well-merited praise, and his ideas have become commonly accepted practice.



BION J. ARNOLD.

Mr. Arnold was born near Grand Rapids, Michigan, August 14, 1861, and is a son of Joseph Arnold and Geraldine Reynolds Arnold. His father moved to Ashland, Nebraska, with his family in 1864, and it was in the public schools of Ashland that young Arnold secured his early education. The Arnold family is of Welsh descent, the first members having settled in America in the Colonial period. On his mother's side Mr. Arnold comes from Scotch ancestry. After passing through the public schools, in 1879, Mr. Arnold entered the civil engineering course at the University of Nebraska. He remained here but one year, going to Hillsdale College, Michigan, where he completed the scientific course and received the degree of B.S. in 1884, taking the prize for a six years' course in mathematics, and three years later was given the degree of M.S. In 1889 the same institution conferred upon him the honorary degree of B.Ph. for engineering work performed subsequent to his graduation. At about this time Mr. Arnold completed a post-graduate course in electrical engineering at Cornell University.

While only a boy at school Mr. Arnold was always building something, and when twelve years of age he had built any number of small steam engines, motors, and the like, and at fourteen had made a bicycle, the first one built in the state of Nebraska, he having been guided entirely by an advertising cut of a high-wheeled machine published in a juvenile paper. At eighteen he had constructed a small, working railroad locomotive, complete in all details, which is still preserved. In all his work he had built his machinery complete from the raw materials with the aid of the crude tools available in a new country where skilled mechanics and good tools were unknown. In this connection it may be well to state that the boy's home during his early childhood was located in a wild country, with three Indian reservations within a few miles and no railroads, machine shops or other inducements to inspire mechanical genius. His tenacity of purpose, however, eventually overcame the difficulties of his surroundings, and at nineteen years of age he left his western home to seek instruction in the East, where he could be in contact with engineering works and the men who made them, but without a friend or even an acquaintance in his chosen field. While at school he spent his vacations running traction engines on western farms, so as to gain a practical knowledge of the handling of machinery. While at college, during vacations he traveled as an engine expert for engine companies, and one summer was engaged with a civil engineering party. His first employment after graduation was as general agent and expert for an engine company, being so engaged for two years, from 1884 to 1886. He then went with the Edward P. Allis Company, of Milwaukee, as a draughtsman, but resigned this position to accept the post of chief designer with the Iowa Iron Works of Dubuque, where he designed much heavy machinery and many large steam engines. He left there to go with the Chicago Great Western Railroad, where he became mechanical engineer, prior to this promotion having been employed by the company as a civil engineer. It was this year, 1888, that Mr. Arnold decided to specialize in electrical engineering, and resigned his position in order to take a post graduate course at Cornell University. Upon the completion of his course he engaged with Thomson-