at least through their organ, *The Physical Review*.[2] The work of foreign physicists may be readily followed through *Science Abstracts, Sec. A*.[3]

During the Winter convention of the Institute, the committee on Electrophysics expects to have a meeting at which it is proposed to prepare a list of topics in electrophysics, of prime importance to electrical engineers. Such a list may be of value in directing their attention into definite channels. A list of possible authors of future papers will also be prepared, and with such an underlying program, the work of this committee, as well as that of its successors, should be much facilitated and systematized.

VLADIMIR KARAPETOFF, *Chairman*,
Committee on Electrophysics.

Some Leaders of the A. I. E. E.

HARRIS J. RYAN, thirty-sixth president of the Institute (1923-24) was born at Powell Valley, Pa., January 8, 1866. His early education was acquired at the Baltimore City College and the Lebanon Valley College. In 1883, when an electrical engineering course was first inaugurated at Cornell University he entered and was graduated in 1887. For two years thereafter, associated with J. G. White and D. C. Jackson, he carried on a general engineering practise under the firm name of Western Engineering Company, but in 1889 he returned to Cornell to take charge of the electrical machinery laboratory. This marked a real epoch in his career in a change from the commercial field to one of scientific research, although his interest in both has always remained broad in its application. It was also about this time that his most notable characteristic evidenced itself; the fine determination and almost inexhaustible patience so essential to the success of a research engineer. In reviewing his achievements, one cannot but be impressed with the clear foresight and unprejudiced manner in which he approached any problem confronting him. One series of experiments made by him resulted in his famous paper on transformers, presented before the 41st meeting of the Institute in 1889. A few years later, in joint authorship with M. E. Thompson, he produced the paper on methods of preventing armature reaction, the outgrowth of which was the Thompson-Ryan generator, forerunner of the present day interpole type used now almost universally in d-c. generators and motors. And of even greater value to industry has been his work with alternating current. When he undertook its investigation, the scientific world knew little concerning it and less regarding the field of high voltages. He started this work in the laboratory at Cornell, constructing under his own supervision, much of the equipment necessary to progress. It is interesting to know that the 90,000-volt dry insulated transformer then built still plays an important part in the laboratory's equipment. His advancement was rapid and in 1890 he was chosen assistant professor in Electrical Engineering. In 1895, when only 29 years of age, the "kid professor," as he was affectionately called, was honored with the appointment of professor in full charge of Electrical Engineering at the university. It was in 1897 that some experiments in the Rocky Mountain region gave birth to the announcement of a 40,000-volt limit for transmission lines. Professor Ryan felt that possibly all factors had not been given adequate consideration. His pioneer spirit was challenged and he began an intensive study of the situation. In 1904 he summarized the results of his investigation in his A. I. E. E. paper, *Conductivity of Atmospheres at High Voltages*, the fundamentals of which were a distinct contribution to science as were also data contained in his later paper before the Institute (1911)—*The Open Atmosphere and Dry Transformer Oil as High-Voltage Insulators*.

In 1905 Professor Ryan accepted a call to Stanford University, where he continued his research work as Head of the Electrical Engineering Department. In recognition of his effective work in higher voltages, the University built in 1913 a high-voltage laboratory, having as its principal equipment a 350,000-volt transformer. He immediately began the development of other types of equipment—one outstanding result an oscillator capable of producing a discharge 10 ft. long and of such intensity as to closely resemble real lightning. He also made a study of high-voltage effects at radio frequencies and cooperated with the Federal Telegraph Company in the design of a 100,000-volt insulator for large radio transmitting antennas. Subsequent developments of the Cathode Ray Oscillograph received much of stimulus from his work. In 1900 he began a series of studies with his objective the adaptation of the Braun type of Cathode Ray tube for engineering measurements. His first years resulted in a very satisfactory method of determining current and voltage wave forms which was later applied to power in a-c. circuits. This work commenced at Cornell led to the presentation of his two Institute papers *The Cathode Ray Alternating Current Wave Indicator* (1903) and the other on the *Cathode Ray Power Diagram Indicator* (1911). He has also given the subject a prominent place in several of his other papers. Of recent years he has devoted much of his time to the study of insulation and insulators for use on high-tension lines—a work of inestimable value to the profession. In recognition of his many contributions to the knowledge of power transmission, he was awarded the degree of Doctor of Laws by the University of California, March 23, 1925, and the same year he was Edison Medalist. Professor Ryan was Judge, Board of Awards at the World's Fair, Chicago, U. S. Government Delegate to the International Electrotechnical Congress, St. Louis, Member of the Jury Panama Pacific International Exposition, San Francisco and Director of the Supersonics Laboratory of the National Research Council, Pasadena, Calif., Consulting Engr. Los Angeles Aqueduct Power Bureau, Fellow of the American Ass'n. for the Advancement of Science, Member of the Am. Electrochemical Soc. Institute of Radio Engineers, Soc. for the Promotion of Engineering Education, Am. Phys. Society, Phi Kappa Psi, Sigma Xi. The new Harris J. Ryan High Tension Laboratory at Stanford University stands a fitting monument to the untiring energy and ability of the man whose name it bears.

History of Lighting Told in Light House Changes

Almost the whole history of lighting is told in the changes made in the first lighthouse built by the United States as an independent government. It's at Cape Henry, at the entrance of Chesapeake Bay.

When the United States finished the lighthouse it used fish oil. That was in 1792. Sperm oil was substituted in 1810. Our whale fisheries began to decline and other oils were sought, first rapeseed or colza oil and later lard oil.

Then we began to realize our wealth in petroleum, and kerosene was used. In 1910 a great improvement was made. Wick lamps were discarded and vaporized kerosene, with an incandescent mantle, was installed. But it lasted only a dozen years, when an electric incandescent lamp was substituted. There's a whole history of light production in 133 years—fish oil, whale oil, colza oil, lard oil, kerosene, gas, electricity.

2. Published in Minneapolis, Minn.; subscription price for non-members is ten dollars.

3. Subscription taken at the Institute headquarters at $5.00 per year for A. I. E. E. members.