Doctor Michael I. Pupin

PRESIDENT-ELECT OF THE A. I. E. E.

As announced in the report of the Committee of Tellers, published elsewhere in this issue Doctor Michael I. Pupin of Columbia University, New York, N. Y., has been elected President of the American Institute of Electrical Engineers for the year beginning August 1, 1925.

Michael Idvorsky Pupin was born in 1858 in Idvor, Banat, which now forms part of the Kingdom of the Serbs, Croats, and Slovenes.

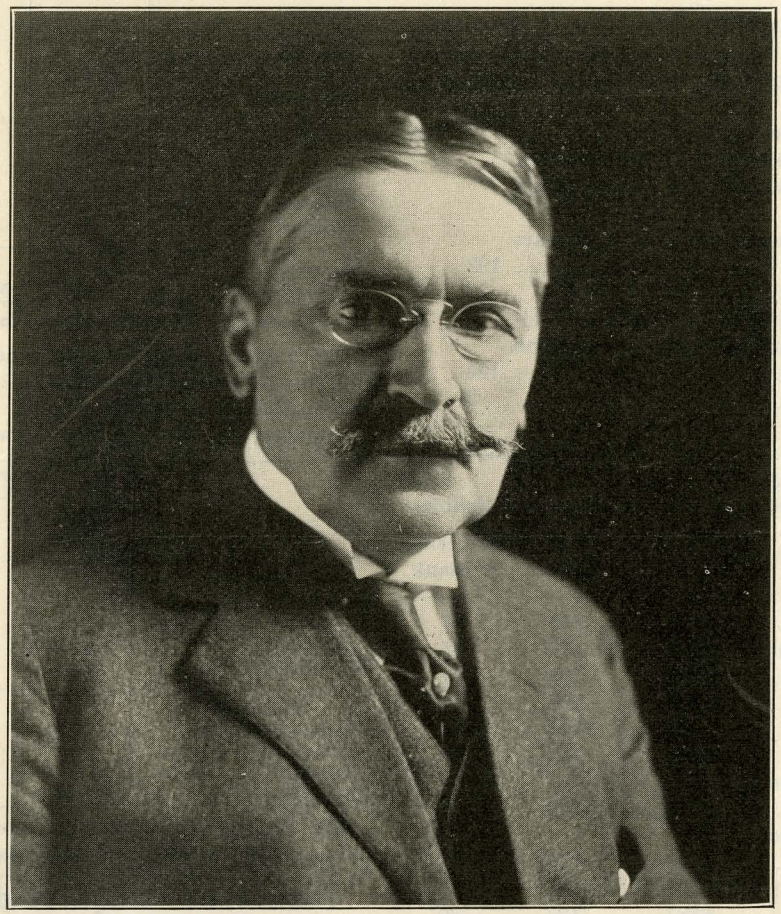
After completing his education at the village school and displaying unusual talents he was sent to Prague, Czecho-Slovakia to continue his education in studies preparatory for higher education. He ran away from Prague and came to America; landed in New York in 1874, and after five years struggle for existence saved up enough money to enter Columbia College, where he graduated with high honors in 1883, with a B. A. degree.

He then returned to Europe for the purpose of taking up graduate work in physics and mathematics at the University of Cambridge, England, and at the University of Berlin, Germany and after earning a Ph. D. at Berlin returned to Columbia University, where, together with the late Professor F. B. Crocker in 1889 as instructor in mathematical physics he started the Electrical Engineering Department.

Doctor Pupin's earliest work was devoted to the study of the passage of electricity through rarefied gases and several papers concerning the results were published. In 1892 he took up the subject of electrical resonance which resulted in the invention of the employment of tuned circuits for selective electrical reception of signals. Also resonance analysis by tuned circuits was worked out by him, employing for means of selectivity by tuning, circuits of variable inductance and variable capacity. The resultant inventions were acquired by the American Marconi Wireless Company in 1902. They are now universally used in radio broadcasting.

In 1895-6 he developed a method of rectifying both low and high-frequency oscillations so as to make them detectable by d-c. instruments. The rectifier consisted of a polarized electrolytic cell, and it was then clear to him that rectification was a very important element in wireless telegraphy, an opinion which has been justified to a remarkable degree by the developments in the wireless art which have taken place within the last twenty-five years. In February 1896 he invented a method of rapid X-ray photography by laying a fluorescent screen upon the photographic plate, a method now universally employed. In March of the same year he discovered secondary X-ray radiation.

The subject of electrical wave transmission over long conductors began to occupy Doctor Pupin's attention as early as 1894, and his earliest work in this direction was chiefly mathematical, and he found a general solution of the great problem of LaGrange, namely, the problem of analyzing the motion of a stretched weightless string carrying at equal intervals of its length equal masses. The solution of this purely dynamical problem suggested immediately its applicability to transmission of electrical waves over telephone wires and it was obvious that the introduction of suitable inductance coils at predetermined distances along the telephone line would greatly improve the efficiency of transmission by making it possible to transmit the electrical energy carrying the articulate voice of man by high potential and small current, thus reducing ohmic resistance losses on the line. This invention was acquired by the American Tel. & Tel. Co. January 1901. The practical applicability of this invention required the knowledge of making highly efficient inductance coils, using very finely laminated iron cores and Pupin devoted a study of several years to the investigation of these iron losses, resulting in the design of the toroidal coil, known all over the world as the Pupin coil. Pupinizé, pupiniziert, and pupinizatione are new words in French, German, and Italian, describing the Pupin method of telephone cable construction adopted at the Paris conference of 1924 for international telephone communication.



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During the war, Doctor Pupin served on several national committees connected with war work, particularly the National. Advisory Committee for Aeronautics and the National Research Council, and with a Government committee for submarine detection, which had its headquarters at New London. Dr. Pupin and his staff were engaged in developing a method of submarine detection by means of very high-frequency sound waves sent out by a panel of vibrating quartz plates. Since the wave length of these sound waves in water is small in comparison with the dimensions of the vibrating plate, the sound waves were concentrated in a beam similar to the light beam sent out by a searchlight. The detection consisted in receiving an echo from a submerged submarine. In prosecuting this work Doctor Pupin developed a multi-step vacuum tube amplifier which is free from internal noises and which does not transmit low frequency under-water noises.

Doctor Pupin is a member of the National Academy of Sciences, of the National Research Council, of the Serbian Academy of Sciences, and of many other learned societies, and has been a Fellow of the American Institute of Electrical Engineers for many years. In 1920 he was awarded the Edison Medal. He has also received from the French Academy the Hebert Prize in Physics, and from the Franklin Institute the Carson Gold Medal, also the Gold Medal from the Social Science Association and the gold medal of honor of the Radio Institute of America. He also holds honorary degrees of Doctorof Science from Columbia, and Princeton Universities; the honorary degree of Doctor of Laws from Johns Hopkins, New York University and Muehlenberg College; and several other honorary degrees from American Universities. He is now Professor of Electro-Mechanics, Columbia University, and Director of the Phoenix Research Laboratory of the same university.

International Electrotechnical Commission at The Hague

Meetings of nine of the Advisory Committees of the International Electrotechnical Commission were held at The Hague April 16th to 23rd, 1925. Delegates were present from thirteen countries. Inasmuch as the meetings included seven working days, with two sessions in parallel on most of the days, a great deal of ground was gone over.

The meeting was characterized by a spirit of harmony, and the evident desire of all delegates to make the meeting as fruitful as possible.

An innovation which was tried at this meeting was that of having reports by experts on subjects of fundamental importance in connection with the work to be undertaken by the Advisory Committees. These reports, and the discussion which followed them, quite in the manner of technical sessions of the A. I. E. E., were very useful in paving the way for the standardization work which followed.

Expert reports were presented from America by N. W. Storer on the Discrepancies between the Present Methods of Testing Traction Motors and the Actual Working Conditions, and by G. Faccioli on the Formation of Sludge as Influenced by the Construction of Transformers. The names of the Advisory Committees, together with the names of the individuals who were designated to preside at their meetings were as follows:

Advisory Committee on Nomenclature.....Dr. Mailloux
Rating.....Prof. Feldman
Symbols.....Prof. Janet
Prime Movers.....Mr. Semenza
Lamp Caps and Sockets.....Dr. Sharp
Standard Voltages.....Mr. Brylinski
Traction Motors.....Dr. Huber Stockar
Insulating Oils.....Dr. Sharp
Rules and Regulations for High Voltage Overhead Transmission Lines.....Dr. Brylinski

Important among the decisions which were reached were the following:

Limiting temperature rise of rotor field windings of large synchronous machines (by resistance); steam turbine Class B insulation, 90 deg.; salient pole machines, 80 deg.

Limiting temperature rise for stator windings with imbedded detectors between coils, Class A insulation, 60 deg.; Class B insulation, 80 deg.

It was recommended that measurement of efficiencies by summation of losses should be standard.

Program of work was decided on for the Advisory Committees on Prime Movers, which is to deal with (1) hydraulic, (2) steam, and (3) internal combustion machines.

The final standardization of the Edison screw base and socket dimensions was deferred, awaiting a report of a technical committee of manufacturers which is promised to be given within a year.

As standard low voltages 220 and 230 were adopted, together with the half and double of each of those values, and also the voltage occurring between each line and neutral of a three-phase four-wire system, having 220 or 230 between lines; namely, 127 volts and 133 volts.

A set of standard high voltages was also agreed upon.

With respect to traction motors, it was agreed that there shall be both a continuous rating and a one-hour rating, and that there shall be an excess load test, as a mechanical and commutation test. Limiting temperature rises were agreed upon and also ambient temperature of reference.

The Committee on Insulating Oils agreed upon a program for conducting comparative tests in various countries to form a basis for the adoption of specifications.

The meetings of the Committees were held in the Royal Institute of Engineers and the Dutch engineers who were the hosts were most efficient in making arrangements for the rapid furtherance of the work and most successful in making the stay of the delegates in The Hague a very enjoyable one.

A. I. E. E. Directors Meeting

The regular monthly meeting of the Board of Directors of the American Institute of Electrical Engineers was held at Institute headquarters, New York, on Friday, May 15, 1925.

There were present: President Farley Osgood, Newark, N. J.—Vice-Presidents William F. James, Philadelphia; Harold B. Smith, Worcester, Mass.—Managers A. G. Pierce, Cleveland; W. K. Vanderpoel, Newark, N. J.; H. P. Charlesworth, New York; John B. Whitehead, Baltimore—Secretary F. L. Hutchinson, New York.

The Board ratified the approval by the Finance Committee of monthly bills amounting to $23,331.18.

A report was presented of a meeting of the Board of Examiners held May 11, and the actions taken at that meeting were approved. Upon the recommendation of the Board of Examiners the following actions were taken upon pending applications: 137 Students were ordered enrolled; 145 applicants were elected to the grade of Associate; 5 applicants were elected to the grade of Member; 7 applicants were transferred to the grade of Member; 2 applicants were transferred to the grade of Fellow.

The annual report of the Board of Directors for the fiscal year ending April 30, 1925, as prepared by the Secretary, was presented and accepted for presentation at the Annual Business Meeting of the Institute during the evening of the same day. The annual report of the Treasurer for the fiscal year ending April 30, 1925, was presented, accepted, and ordered filed.

The annual reports of various standing committees (exclusive of the technical committees, whose reports will be presented at the Annual Convention in June), abstracts of which were incorporated in the Board of Directors' report, were presented, received, and ordered filed for reference, particularly by the chairmen of the incoming committees of the next administration.

On account of the increasing development and popularity of the regional meetings, and for the purpose of furthering this development, the Board voted to discontinue the Spring Convention of the Institute.

The Committee on Award of Institute Prizes reported on the award of the First-Paper Prize and of the Transmission Prize for 1924, as announced elsewhere in this issue.

Upon the recommendation of the Committee on Applications to Marine Work, the Board voted to approve the publication of a revised edition of the Marine Rules of the Institute.

Upon the recommendations of the Standards Committee, the Board approved the adoption of the following as A. I. E. E. Standards: "Standards for Direct and Alternating-Current