



AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

33 WEST 39TH STREET, NEW YORK, N. Y.

Dec. 8, 1927 192



Mr. A. H. Kehoe
United Elec. Lt. & Pr. Co.
130 E. 15th St.
New York, N. Y.

In order to avoid unnecessary delay in the consideration of this application, please return this form at your earliest convenience. Typewritten copy preferred.

Dear Sir:

An application for admission as a MEMBER of the American Institute of Electrical Engineers has been filed by Luigi Emanuelli, Chief Engineer

Electric Cable Dept.
Societa Italiana Pirelli
Milan, Italy

who has given your name as one of the references required under our Constitution and By-laws.

For the confidential information of our Board of Examiners, will you kindly reply to the following inquiries?

Very truly yours,

F. L. Hutchinson
National Secretary.

(See qualifications for the grade of Member, printed on the back of this form).

For how long a period have you personally known the applicant?

Five (5) years

Are you of the opinion that (a) his character is such that if elected he will prove a creditable MEMBER of the Institute, and that (b) he meets the other constitutional requirements for the grade of MEMBER?

(a) Yes (b) Yes

Kindly state instances within your personal knowledge of important work in the field of electrical engineering or the allied arts performed by the applicant, and your opinion of such work.

With Pirelli Company twenty (20) years, supervising & developing design and construction of rubber and paper insulated cables, including special developments in power cables, telephone cables, and submarine telegraph cables.

Included in the above is the 132,000-volt cable development, large installations of which cable have been made in New York and Chicago.

Has contributed frequently to technical literature in Europe and the United

Date 12/12/27

Signed

A. H. Kehoe Fellow

Statement may be continued on the back of this form.

NOTE: If you desire the applicant's record before replying, please check here and return this form.



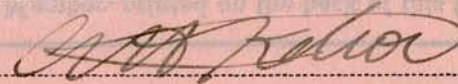
States.

Developed the method of grading cable insulation by using papers of different densities, inventing a special instrument known as a porosity meter for measuring this property, which instrument is now used by American paper manufacturers & by the United States Bureau of Standards.

Original research into the laws governing the flow of viscous liquids at various temperatures and pressures, also the physical properties of lead when stressed at various temperatures.

Date 12/12/27

Signed



EXTRACTS FROM THE CONSTITUTION.

5. A Member shall be not less than twenty-seven years of age, and shall be either:
- a. An electrical engineer by profession. As such, under general direction, he shall have designed and taken responsibility for important electrical engineering work; he shall have been in the active practice of his profession for at least five years.
When the applicant holds in a principal national society of an allied branch of engineering, membership of a grade for which the qualifications indicate a standing equal to that required for the grade of Member herein, such membership shall be considered equivalent to two and one-half years of the requisite five years in active practice of the electrical profession.
 - b. A teacher of electrical engineering or of electrical science. As a teacher of electrical subjects he shall have had at least five years' experience in a school of recognized standing. Any years of experience the applicant may have had as an electrical engineer shall be considered the equivalent of the same number of years of experience as a "teacher of electrical engineering or of electrical science."
 - c. A person regularly employed in electrical or closely allied work for at least five years, who, by inventions or by proficiency in electrical science, the electrical arts, or electrical literature, or as an executive of an electrical enterprise of large scope, has attained a standing equivalent to that required for Members under paragraphs "a" and "b." In the case of such an executive the applicant must be qualified to take responsible charge of the broader features of electrical engineering involved in the work under his direction.

Qualifications for the grade of Member

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AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

33 WEST 39TH STREET, NEW YORK, N. Y.



Dec. 8, 1927 192

Mr. J. W. Lieb
124 East 15th Street
New York, N. Y.

In order to avoid unnecessary delay in the consideration of this application, please return this form at your earliest convenience. Typewritten copy preferred.

Dear Sir:

An application for admission as a MEMBER of the American Institute of Electrical Engineers has been filed by

Luigi Emanuelli, Chief Engineer
Electric Cable Dept.
Societa Italiana Pirelli
Milan, Italy

who has given your name as one of the references required under our Constitution and By-laws.

For the confidential information of our Board of Examiners, will you kindly reply to the following inquiries?

Very truly yours,

F. L. Hutchinson
National Secretary.

(See qualifications for the grade of Member, printed on the back of this form).

For how long a period have you personally known the applicant?

over forty (40) years

Are you of the opinion that (a) his character is such that if elected he will prove a creditable MEMBER of the Institute, and that (b) he meets the other constitutional requirements for the grade of MEMBER?

(a) *yes* (b) *yes*

Kindly state instances within your personal knowledge of important work in the field of electrical engineering or the allied arts performed by the applicant, and your opinion of such work.

Mr. Emanuele is one of the most distinguished of Italian Engineers & probably the greatest Cable expert on High Voltage Cables in the world. He possesses to my personal knowledge every qualification possible

Date *Dec 13th 1927* Signed *J. W. Lieb*

Statement may be continued on the back of this form

NOTE: If you desire the applicant's record before replying, please check here



AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

33 WEST 39TH STREET, NEW YORK, N. Y.

Dec. 8, 1927

192



Mr. D. W. Roper
Room 528 72 W. Adams St.
Chicago, Ill.

In order to avoid unnecessary delay in the consideration of this application, please return this form at your earliest convenience. Typewritten copy preferred.

Dear Sir:

An application for admission as a MEMBER of the American Institute of Electrical Engineers has been filed by

**Luigi Emanuelli, Chief Engineer
Electric Cable Dept.
Societa Italiana Pirelli
Milan, Italy**

who has given your name as one of the references required under our Constitution and By-laws.

For the confidential information of our Board of Examiners, will you kindly reply to the following inquiries?

Very truly yours,

F. L. Hutchinson
National Secretary.

(See qualifications for the grade of Member, printed on the back of this form).

For how long a period have you personally known the applicant?

Four years.

Are you of the opinion that (a) his character is such that if elected he will prove a creditable MEMBER of the Institute, and that (b) he meets the other constitutional requirements for the grade of MEMBER?

(a) Yes (b) Yes

Kindly state instances within your personal knowledge of important work in the field of electrical engineering or the allied arts performed by the applicant, and your opinion of such work.

The Company with which he is connected is one of the most progressive manufacturers of high-voltage underground cable in the world, and this is largely due to the genius and skill of Mr. Emanuelli. In 1923 I found that Mr. Emanuelli was conducting more research investigations

Date *Dec 24, 1927* Signed *D. W. Roper* Fellow

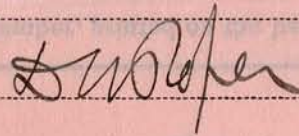
Statement may be continued on the back of this form.

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on subjects concerning the development of high-voltage cable than any other of the 13 cable factories which I visited in Europe on that trip. This opinion has since been confirmed by several other American engineers who have made similar trips.

Following my return from this trip, I presented a paper to the Convention of the Association of Edison Illuminating Companies at Dixville Notch. Following the reading of the printed paper, I made some remarks about my visits to two of the factories. The stenographic report of my remarks is attached. The first factory mentioned in these remarks was the Pirelli factory, and the engineer referred to was Mr. Emanuelli.

Date December 23, 1927. Signed



EXTRACTS FROM THE CONSTITUTION.

5. A Member shall be not less than twenty-seven years of age, and shall be either:
- a. An electrical engineer by profession. As such, under general direction, he shall have designed and taken responsibility for important electrical engineering work; he shall have been in the active practice of his profession for at least five years.
When the applicant holds in a principal national society of an allied branch of engineering, membership of a grade for which the qualifications indicate a standing equal to that required for the grade of Member herein, such membership shall be considered equivalent to two and one-half years of the requisite five years in active practice of the electrical profession.
 - b. A teacher of electrical engineering or of electrical science. As a teacher of electrical subjects he shall have had at least five years' experience in a school of recognized standing. Any years of experience the applicant may have had as an electrical engineer shall be considered the equivalent of the same number of years of experience as a "teacher of electrical engineering or of electrical science."
 - c. A person regularly employed in electrical or closely allied work for at least five years, who, by inventions or by proficiency in electrical science, the electrical arts, or electrical literature, or as an executive of an electrical enterprise of large scope, has attained a standing equivalent to that required for Members under paragraphs "a" and "b." In the case of such an executive the applicant must be qualified to take responsible charge of the broader features of electrical engineering involved in the work under his direction.

Qualifications for the grade of Member

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AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

33 WEST 39TH STREET, NEW YORK, N. Y.

Dec. 8, 1927 192

Mr. Frank W. Smith
130 E. 15th St.
New York, N. Y.



In order to avoid unnecessary delay in the consideration of this application, please return this form at your earliest convenience. Typewritten copy preferred.

Dear Sir:

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Luigi Emanuelli, Chief Engineer
Electric Cable Dept.
Societa Italiana Pirelli
Milan, Italy

who has given your name as one of the references required under our Constitution and By-laws.

For the confidential information of our Board of Examiners, will you kindly reply to the following inquiries?

Very truly yours,

F. L. Hutchinson
National Secretary.

(See qualifications for the grade of Member, printed on the back of this form).

For how long a period have you personally known the applicant?

Ten years.

Are you of the opinion that (a) his character is such that if elected he will prove a creditable MEMBER of the Institute, and that (b) he meets the other constitutional requirements for the grade of MEMBER?

(a).....YES.....(b).....YES.....

Kindly state instances within your personal knowledge of important work in the field of electrical engineering or the allied arts performed by the applicant, and your opinion of such work.

Development, design and construction of rubber and paper insulated cables. Special developments in power cables, telephone cables, and submarine telegraph cables.

Developed method of grading cable insulation by using papers of different densities;

inventing special instrument known as a Porosity meter, for measuring this property.

(This instrument now in use by American paper manufacturers and by U S Bureau of Standards)

Date *December 13/27* Signed *Frank W. Smith*

Statement may be continued on the back of this form.

(OVER)

Member

NOTE: If you desire the applicant's record before replying, please check here and return this form.

Development of 132,000 volt cable.

Responsible for original research into the laws governing the flow of viscous liquids at various temperatures and pressures; also the physical properties of lead when stressed at various temperatures.

Frequent contributor to technical literature, both in Europe and the U.S.

Date _____ Signed _____

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- a. An electrical engineer by profession. As such, under general direction, he shall have designed and taken responsibility for important electrical engineering work; he shall have been in the active practice of his profession for at least five years.
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- c. A person regularly employed in electrical or closely allied work for at least five years, who, by inventions or by proficiency in electrical science, the electrical arts, or electrical literature, or as an executive of an electrical enterprise of large scope, has attained a standing equivalent to that required for Members under paragraphs "a" and "b." In the case of such an executive the applicant must be qualified to take responsible charge of the broader features of electrical engineering involved in the work under his direction.
- Qualifications for the grade of Member**



AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

33 WEST 39TH STREET, NEW YORK, N. Y.

Dec. 8, 1927

192



Mr. Wallace S. Clark
13 Front St.
Schenectady, N. Y.

In order to avoid unnecessary delay in the consideration of this application, please return this form at your earliest convenience. Typewritten copy preferred.

Dear Sir:

An application for admission as a MEMBER of the American Institute of Electrical Engineers has been filed by

Luigi Emanuelli, Chief Engineer
Electric Cable Dept.
Societa Italiana Pirelli
Milan, Italy

who has given your name as one of the references required under our Constitution and By-laws.

For the confidential information of our Board of Examiners, will you kindly reply to the following inquiries?

Very truly yours,

F. L. Hutchinson
National Secretary.

(See qualifications for the grade of Member, printed on the back of this form).

For how long a period have you personally known the applicant?

Since 1910

Are you of the opinion that (a) his character is such that if elected he will prove a creditable MEMBER of the Institute, and that (b) he meets the other constitutional requirements for the grade of MEMBER?

(a) *yes* (b) *yes*

Kindly state instances within your personal knowledge of important work in the field of electrical engineering or the allied arts performed by the applicant, and your opinion of such work.

*Developed relation between density & function
resistance on cable paper. Developed 132 K.V.
oil filled cable. Many papers before
foreign scientific bodies.*

Date *Dec 12-1927* Signed *Wallace S. Clark*

Statement may be continued on the back of this form.

Associate

NOTE: If you desire the applicant's record before replying, please check here and return this form.

COMMONWEALTH EDISON COMPANY

(Copy)

September 23, 1923.

(Remarks made by Mr. D. W. Roper
after the reading of his paper.)

Occasionally some incidents will occur that create a stronger impression than a mere statement of facts and tabulations of figures, and if time will permit, I would like to relate two such incidents.

In one factory which we visited, going there by appointment at two o'clock in the afternoon, we were met with an apology from the engineer because he had made a previous engagement for four o'clock in the same afternoon and he would have to leave us at that time. He stated, however, that he would conduct us personally through their testing and research laboratories as that was considered the most important part of their factory and he would endeavor to answer all of our questions regarding their processes and their methods of testing and research, and that when four o'clock arrived, another engineer would show us through the factory so that we could see their manufacturing methods. This reversed the ordinary procedure, as most of the questions arise after the various manufacturing methods and materials are noted by visiting the factory. We had, however, visited a number of other factories previous to this one and had in mind some of the technical questions that most clearly brought out the quality of

COMMONWEALTH EDISON COMPANY

-2-

the cable manufactured or indicated the extent to which they had made research investigations into the properties of their raw materials and the finished product.

After a few preliminary questions regarding the raw materials and the details of the manufacturing processes, I asked a technical question. Our host immediately turned and spoke to one of the boys in the vicinity and then proceeded to answer my question in as much detail as possible. While in the midst of this explanation, the boy returned and placed a type-written report in the hands of our host, who said a few more words to the boy and then opened the report and elucidated his answer by means of the figures and curves contained in the report. A few minutes later, as we were continuing our walk through the laboratory, I noticed that the boy was following us around with a package of reports under his arm. (Laughter.) This looked like a challenge, a sort of defy, which I immediately accepted mentally and started to ask a few more technical questions. In particular, I endeavored to ask this engineer those questions which on similar previous occasions had been followed by a stammering, stuttering or evasive answer, or perhaps where I had been unable to secure any definite reply. In each case, our host answered the question in a direct, straight-forward manner and whenever his oral statement could be exemplified or made more definite or emphatic by means of figures or curves, the proper report

COMMONWEALTH EDISON COMPANY

-3-

was removed from under the boy's arm and submitted for my inspection. I tried to ask him a technical question about cable manufacture or operation that was not covered by his reports. The best that I could do was to ask him one question which was not covered by the reports under the boy's arm, but he immediately sent the boy back to the office and got the missing report. (Laughter.) On this report being submitted for my inspection, I turned over the pages in order to learn the date, because the question was one that had bothered several other European and American manufacturers. The report was about two years old.

When we reached the high-voltage, testing laboratory, the most conspicuous object was a large oil tank for making dielectric strength tests on short samples of single-conductor cable about 15 feet long. This tank had a horizontal section similar to a dumb-bell, i.e. there were two large circular tanks about 6 feet in diameter connected by a straight, narrow channel all made of steel and partially filled with transil oil. A piece of cable about 15 feet long with the lead trimmed back about two feet from each end was ready for test. The insulation thickness was 12 millimeters or about $15/32$ of an inch. This sample was connected to the testing transformer, placed in the tank of oil and then the voltage was raised rapidly to about 300,000 volts at which point the current flashed across the outside of the paper insulation between the end of the conductor and the lead sheath. This was repeated several times with approximately the same result. The cable was removed from the oil

COMMONWEALTH EDISON COMPANY

-4-

tank so that we could verify the statement of our host that the flashing had occurred at the end of the sample and that there was no puncture of the insulation.

While the sample was on the floor and being inspected, we inquired about a bending test. Whereupon, our host apologized for not having bent the sample in advance and then instructed the men to bend the sample by bringing the two ends together and without stopping to find any form which would limit the radius of curvature. The sample was bent so that the ends were together for a distance of two or three feet and the minimum radius must have been eight or nine times the overall diameter of the cable. Then the sample was straightened out again and placed in the tank and the high voltage test repeated. This time the flashing occurred at 290,000 volts, or practically the same as the previous test.

This test was of particular interest to us because we had previously been told by another manufacturer that it was quite impossible to make a single-conductor, high voltage cable in which the insulation would not be ruined by simply raising the middle of the long length of cable two or three feet from the floor and then allowing it to drop, an operation which was repeated many times during the installation of such a cable. Probably the other manufacturer meant that he could not make cables to stand that test.

* * * * *

The succeeding remarks refer to another factory, and are, therefore, of no particular interest in connection with Mr. Emanuelli's application.