posit of alloys of lead and tin can be obtained from fluoborate solutions than is possible when depositing either of the metals under similar conditions is established.

The structure and properties of alternately electro-deposited metals: WM. BLUM. If during the deposition of copper thin layers of nickel are interposed, a deposit of greater tensile strength than pure copper results due to the restraining influence nickel has on the growth of copper crystals.

In all the meeting proved to be most profitable, social and instructive.

A. D. SPILLMAN,
Secretary

THE OPTICAL SOCIETY OF AMERICA

HELMHOLTZ MEMORIAL MEETING

THE sixth meeting of the Optical Society of America was held in Rochester, N. Y., October 24, 25, 26, 1921. 113 persons were registered in attendance. The attendance at various sessions varied from about 35 to 100 or more.

The most notable feature of the meeting was the Helmholtz Memorial Meeting held on the afternoon and evening of Monday, October 24. The following former students of Helmholtz were present: Professor Henry Crew, Professor C. R. Mann, Professor Ernest Merritt, Professor E. L. Nichols, Professor M. I. Pupin, Dr. Ludwik Silberstein. The afternoon program was as follows:

A brief survey of the historical development of optical science: PROFESSOR J. P. C. SOUTHALL.

Helmholtz's early work in physics—the conservation of energy: PROFESSOR HENRY CREW.

Helmholtz's contributions to physiological optics: L. T. TROLAND.

Professor Crew exhibited lantern slides showing Helmholtz at the time he wrote the essay on the Conservation of Energy (age 26) and also at later periods of his life.

At the evening session Professor M. I. Pupin spoke informally and in most interesting and delightful manner on his Personal Recollections of Helmholtz. Professor E. L. Nichols, Professor Ernest Merritt, Dr. Ludwik Silberstein, Mrs. Christine Ladd-Franklin and Professor C. R. Mann also spoke of their memories of Helmholtz as a teacher. Professor Mann showed a lantern slide of a photograph which he himself made on July 7, 1894, showing Helmholtz at his lecture desk only a few days before his last illness.

The Helmholtz Memorial addresses will be published in the Journal of the Optical Society of America.

Various scientific societies were represented at the meeting by delegates as follows:

American Mathematical Society: Professor A. S. Gale.

American Physical Society: Professor M. I. Pupin, Dr. L. T. Troland, Professor Henry Crew.

American Association for the Advancement of Science: Professor M. I. Pupin.

New York Academy of Science: Professor M. I. Pupin.

American Academy of Ophthalmology and Oto-Laryngology: Dr. R. S. Lamb.

American Medical Association, Section of Ophthalmology: Dr. W. B. Lancaster.

American Ophthalmological Society: Dr. Lucien Howe, Dr. George S. Crampton.

Society of Illuminating Engineers: Dr. George S. Crampton.

American Psychological Association: Dr. L. T. Troland, Mr. Prentice Reeves, Professor C. E. Ferree, Dr. P. W. Cobb.

The following papers were presented at the regular sessions of the Society on October 25 and 26.

Photo-electric potentials from the retina: E. L. CHAFFEE AND W. T. BOVIE (to be published in full in the *Jour. Op. Soc. Am.*).

Intensity and composition of light and size of visual angle in relation to important ocular functions: C. E. FERREE AND GERTRUDE RAND.

A theory of intermittent vision: HERBERT E. IVES (to be published in full in the *Phil. Mag.*).

An analysis of the visibility curve in terms of the Weber-Fechner law and the least perceptible brightness: ENOCH KARRER (to be published in full in the *Jour. Op. Soc. Am.*).

A quantitative determination of the inherent saturation of spectral colors: L. T. TROLAND (to be published in full in the *Jour. Op. Soc. Am.*).

The interrelations of brilliance and chroma studied by a flicker technique: L. T. TROLAND AND C. H. LANGFORD (to be published in full in the *Jour. Op. Soc. Am.*).

A proposed standard method of colorimetry: HER-

BERT E. IVES (to be published in full in the *Jour. Op. Soc. Am.*).

Accuracy in color matching: W. E. FORSYTHE (to be published in full in the *Jour. Op. Soc. Am.*).

Measurement of the color temperature of the more efficient artificial light sources by the method of rotatory dispersion: IRWIN G. PRIEST (to be published in full in the *Jour. Op. Soc. Am.*).

The Blue Glow: E. L. NICHOLS AND H. L. HOWES (to be published in full in the *Jour. Op. Soc. Am.*).

The optical properties of a cylindrical enclosure with specularly reflecting walls: HERBERT E. IVES.

The relation between glass and the deflection characteristics of surfaces: LLOYD A. JONES AND M. F. FILLIUS (to be published in full in the *Jour. Op. Soc. Am.*).

The graininess of photographic materials: LLOYD A. JONES AND ARTHUR C. HARDY (to be published in full in the *Jour. Frank. Inst.*).

The design of aspherical lens surfaces: P. G. NUTTING.

On the distribution of light in planes above and below the image plane in the microscope: FRED E. WRIGHT.

The factors underlying the measurement of refractive indices by the immersion method: FRED E. WRIGHT (two preceding to be published in one paper in the *Jour. Op. Soc. Am.*).

Some thermal effects observed in chilled glass: A. Q. TOOL AND C. G. EICHLIN.

A new X-Ray diffraction apparatus: WHEELER P. DAVEY (to be published in full in the *Jour. Op. Soc. Am.*).

Rotating photometric sectors of adjustable transmission while in motion: CARL W. KEUFFEL AND C. D. HILLMAN (to be published in full in the *Jour. Op. Soc. Am.*).

Euscope: WILLIAM G. EXTON.

Turbibimeter: WILLIAM G. EXTON.

On Tuesday evening, October 25, visiting members were guests at a dinner entertainment given by the Rochester Section of the Society.

The very well conducted trips through the Research Laboratories of the Eastman Kodak Company and the glass plant, optical shops and observatory of Bausch and Lomb were also much appreciated by the visiting members.

The Rochester Section was given a hearty vote of thanks for its hospitality and the many courtesies extended during this very successful meeting.

Forty new members were elected. The membership is now about three hundred.

The Society's intention to cultivate actively the field of physiological optics was indicated by the following resolution, adopted October 26, 1921:

WHEREAS the Optical Society of America is devoted to the science of optics, pure and applied, a subdivision of which is the subject of Physiological Optics, with the several contributory sciences of physiology, psychology, physics and chemistry, representatives of which sciences have at the present time no common meeting ground for the discussion of problems of vision of mutual interest and

WHEREAS, the National Research Council, through its Committee on Physiological Optics, has recommended to the Optical Society of America the taking of such steps as may be necessary to further and encourage cooperative efforts in research in vision and allied phenomena, therefore be it

Resolved that the Optical Society of America does hereby signify its intention of devoting one or more sessions of each annual meeting to papers on Physiological Optics and other appropriate subjects related to vision, and

Resolved that there be and hereby is established by the Society a Standing Committee of three, the duty of which shall be

(1) To prepare the program of the sessions on Vision,

(2) To coordinate the work of the Society in this field with the work of other Societies and

(3) To recommend, from time to time, such further steps as may be deemed effective in encouraging research in Physiological Optics and allied problems. And

Resolved further that the Optical Society, through its Committee on Physiological Optics, shall invite all those interested in research on Vision and allied fields to participate actively in these sessions.

The next meeting will be held at the National Bureau of Standards in Washington in the latter part of October, 1922. It is tentatively planned to hold an exhibition of optical instruments in connection with this meeting.

IRWIN G. PRIEST,
Secretary