

rent almost instantly, was adjusted in these experiments so as to have a natural period of vibration of 8,500 complete periods per second. Under these circumstances it can hardly be questioned that the curves obtained represent the actual variations of current in the circuit. In measuring the oscillatory charge and discharge of condensers, Dr. Millis has obtained some beautiful curves, reproductions of which accompany the article. The agreement between the computed and observed period of oscillation is in most cases within two or three per cent. Curves showing the effect of an iron core in the self-induction coil are especially interesting. The damping of the oscillations, caused by the eddy currents developed in the iron, is very noticeable, and it is found that a thin tube of iron is as effective in producing this damping as is a solid core.

*Admittance and Impedance Loci:* By F. BED-  
DELL. This paper deals with the application of the principles of geometrical inversion to the graphical treatment of alternating current problems. As a result of the reciprocal relation between admittance and impedance Dr. Bedell shows that it is always possible to proceed from a polar diagram representing one problem, to a second diagram which may be interpreted in connection with what might be called the *inverse* problem. Several special cases are discussed, but their presentation here would carry us beyond the limits of this extract.

*Visible Electric Waves:* By B. E. MOORE. While repeating some of the experiments of Lecher on stationary electric waves along wires Mr. Moore found that under certain conditions the whole wire became luminous, the nodes and loops of the electric waves being clearly indicated by the form of the hazy light surrounding the wire. This article describes the conditions under which the phenomena are obtained. This method of showing the presence of electrical waves will doubtless prove most instructive and useful for lecture illustration.

*Note on the Refractive Index of Water and Alcohol for Electric Waves:* By J. F. MOHLER. The writer calls attention to a source of error in experiments previously described by Prof. Cole (Phys. Rev., Vol. IV., p. 50).

*Book Notices.* Nernst: Theoretical Chemistry; Landauer: Spectralanalyse; Gage: Principles of Physics.

#### NEW BOOKS.

*Elements of Physics.* Vol. II. *Electricity and Magnetism.* EDWARD L. NICHOLS and WILLIAM S. FRANKLIN. New York and London, The Macmillan Co. 1896. Pp. ix+272. \$1.50.

*Alternating Currents and Alternating Current Machinery.* Vol. II. DUGALD C. JACKSON and JOHN PRICE JACKSON. New York and London, The Macmillan Co. 1896. Pp. xvii+729. \$3.50.

*Problems in Elementary Physics.* E. DANA PIERCE. New York, Henry Holt & Co. 1896. Pp. vii+194.

*A Manual of Quantitative Chemical Analysis.* FREDERICK A. CAIRNS. Third Edition. Revised and enlarged, by ELWYN WALLER. New York, Henry Holt & Co. 1896. Pp. xii+427.

*Trigonometry for Beginners.* By REV. J. B. LOCK. Revised and enlarged by JOHN A. MILLER. New York and London, The Macmillan Co. 1896. Pp. 147+63. \$1.10.

*The Report of the Michigan Board of Agriculture, 1895.* Pp. 900.

*General Principles of Zoology.* RICHARD HERTWIG. Translated by GEORGE W. FIELD. New York, Henry Holt & Co. 1896. Pp. xii+226.

*The Human Body.* H. NEWELL MARTIN. Seventh edition, revised. New York, Henry Holt & Co. 1896. Pp. vii+685.

*A Handbook of Rocks for Use without the Microscope.* JAMES FURMAN KEMP. New York, Printed for the author. 1896. Pp. vii+176. \$1.50.

*Pioneers of Science in America.* Reprinted with additions by WILLIAM JAY YOUNG. New York, D. Appleton & Co. 1896. Pp. viii+508.

*Erratum:* IN the report of the papers read by Prof. D. T. MacDougal before Section G., A. A. S., the last two paragraphs (on page 624) should be placed after the first paragraph on the second column on page 435.