

electromotive force, but when the circuit is in advance of the electromotive force an increase of frequency decreases the reactance.

The author points out that the terms virtual and effective are employed indiscriminately by some writers, but has been unsuccessful in his attempt to make the terms clear. The effective value of the E. M. F. is taken to be its component of direction of the current; the effective current is the component of current in the direction of the E. M. F., all of which is quite beyond criticism, unless it be one of words. 'Virtual value' is adopted to designate the square root of the mean square value and is properly explained to be the equivalent of a direct electromotive force or current which would produce the same effect either on an electrostatic voltmeter, or in heating. Thus, we may have occasion to refer to the virtual value or to the maximum value of any quantity, as of the impressed E. M. F., of the effective E. M. F., of the total current, or of the effective current. Although thus clearly giving a proper meaning to the term virtual, the author usually employs 'virtual E. M. F.' as synonymous with 'impressed E. M. F.,' and 'virtual current' as being the total or actual current which flows as distinguished from a particular component of it. Thus (p. 83), "In most circuits the impressed or virtual E. M. F. meets with an opposing E. M. F. of reactance, and the effective E. M. F. is something less than the virtual E. M. F. \* \* \*" Also (p. 84), "That proportion of the current which can do useful work may be called the *effective current*. When there is no phase difference, the effective current is the same as the virtual current; but as the angle of lag or lead increases, so does the value of the effective as compared with the virtual current diminish." Again (p. 87), the author refers to 'impressed or virtual electromotive force.'

These two much abused words are likewise unnecessarily dragged in; thus (p. 64) we note 'virtual or effective resistance;' (pp. 89 and 93), 'effective watts,' the imputation being that we, might likewise have ineffective watts! Also (p. 94) we are told that the virtual watts put into a circuit may be far in excess of the actual power conveyed!

Throughout the book the author has used terms with meanings other than those he has assigned to them by definition.

These blemishes are serious ones. With thorough revision, the book will satisfactorily meet the admirable end the author had in view.

FREDERICK BEDELL.

*Anleitung zur Mikrochemischen Analyse der wichtigsten organischen Verbindungen.* Von H. BEHRENS, Professor an der Polytechnischen Schule zu Delft. Viertes Heft. Karbamide und Karbonsaeuren. Mit 94 Figuren im Text. Hamburg und Leipzig, Verlag von Leopold Voss. 1897. Pp 129. Mark 4.50.

In the first number of Professor Behrens' book the anthracene group, phenols, quinones, ketones and aldehydes were considered. The second number, treating of fibrous materials, was reviewed in this JOURNAL for January 15, 1897. The third number deals with aromatic amines, and with the present number continues the work satisfactorily. It should be remembered that Professor Behrens' work is the only textbook extant in this important field.

E. R.

*Die Chemie im täglichen Leben.* Von DR. LASSAR-COHN. Universitäts Professor zu Königsberg. Zweite Auflage. Hamburg und Leipzig, Verlag von Leopold Voss. 1897.

The first German edition of Professor Lassar-Cohn's book was fully reviewed in this JOURNAL for January 22, 1897, by Professor Orndorff. The appearance of a second German edition, and the success of Professor Pattison-Muir's English translation show the value of the book.

E. R.

#### SOCIETIES AND ACADEMIES.

##### THE NEBRASKA ACADEMY OF SCIENCES.

THE eighth annual meeting of the Academy was held at Lincoln on November 26th and 27th. On the first day the Presidential address was given by Dr. A. S. von Mansfelde, of Ashland, his subject being 'Some Practical Applications of Science.' It was devoted largely to a discussion of the alcohol question from the scientific and medical point of view in opposition to many untenable positions taken by advocates of total abstinence.