

affected by the influence of environment, I cannot acknowledge that any proof of the transformation of the fundamental features of types exists.

In our investigations on the early history of mankind three methods are available, each directed to a certain series of phenomena—physical type, language, customs. These are not transmitted and do not develop in the same manner. The one persists when the other changes, but all may be made to contribute to the solution of the general problem. The study of the distribution of languages permits us to make nicer divisions and to follow historical changes in greater detail than that of the distribution of physical types. But often the latter give evidence in regard to phenomena which cannot be approached by linguistic methods. The distribution of the Alpine type of man in Europe, or that of the Sonoran type in North America, may be mentioned as instances of this kind. It would be absurd to state that in these cases similarity of type does not prove blood-relationship, because there is no linguistic evidence to support it. On the contrary, the physical investigation supplies evidence that cannot be gained by linguistic facts. The three methods mentioned above are all equally valuable, but since they do not refer to the same classes of facts it must not be expected that they will clear up the same incidents in the early history of mankind, but all may be utilized with equal advantage in the study of this subject.

In regard to the affinities of the American race to other races Dr. Ehrenreich seems to be inclined to consider it as equally closely related to the Asiatic and to the European races. He lays particular stress upon the proportions of the body and the form of the hair as distinguishing the Americans from the Asiatics. In this opinion he agrees to a certain extent with Brinton. It would seem to me that in determining the position of a race we should be guided by the morphology of its most generalized forms, namely of women and children. The far-reaching similarity between American and Asiatic children and women is very striking. They have in common the wide and rather low nose, the form of the eye and of the maxilla. The

physiognomic similarity is so great that it would seem to be of greater weight than the variable proportions of the body which are much more subject to influences of environment.

FRANZ BOAS.

The Alternating-Current Circuit: An Introductory and Non-mathematical Book for Beginners and Students. By W. PERREN MAYCOCK. London, Whittaker & Co. 1897. 16mo. Pp. 97. Price, \$1.00.

It is the author's purpose to convey some idea of single-phase alternating currents to the minds of those new to the subject, by means of plainly worded and non-mathematical language. In his preface (April, 1897) he states that the book forms the substance of a chapter in the forthcoming Volume II. of 'Electrical Lighting and Power Distribution.' With a thorough revision it would make an admirable chapter for such a book. Although the book is small, the reviewer appreciates the amount of labor that has been spent upon it in arranging the more important alternating current phenomena and discussing them in a manner suitable for non-mathematical beginners. The author has attempted to make his style simple and clear, successfully in the main, but with many startling lapses. What idea is conveyed to a reader (and he need not be a non-mathematical beginner) from the statement (p. 8), "The current in a given circuit is thus proportional to the distance traversed at each alternation by any given coulomb, C , multiplied by the number of alternations per second; so that if the current is kept constant, when the frequency is doubled, the path traversed by any given coulomb will be halved, and *vice versa*."

We note error as well as confusion; for example, on page 64 we are told that reactance varies directly as the inductance and the mutual induction. As a matter of fact, mutual induction in a case of a transformer diminishes the reactance; for the primary circuit of a transformer has less reactance when the secondary is loaded than when it is on open circuit. Again, it is stated (pages 64 and 85) that reactance depends directly upon the inductance and the frequency, and inversely upon the capacity. This is true when the current lags behind the

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.