Book Reviews

Principles of Geochemistry. Brian Mason. New York: Wiley; London: Chapman & Hall, 1952. 276 pp. $5.00.

Nowadays, one who would write of geochemistry must be prepared to touch upon questions of astrophysics and cosmochemistry, upon what may be termed the protochemistry and the paleochemistry of the developing earth, with its several supposed zones and its aqueous and atmospheric envelopes. In addition, he must treat the chemistry of the mineral constituents of the earth's crust and the physical chemistry of the mineral assemblages, including the changes they suffer under changing environments. This necessarily involves questions of their interaction with each other and with the constituents of the atmosphere and the hydrosphere. In treating these, he cannot neglect certain aspects of biochemistry—for some rocks are the direct result of life processes and others are strongly affected by them. Even though he may nominally confine himself to principles, he must present a far-from-inconsiderable amount of factual data. In short, he sets himself a task of no mean magnitude. Yet in a text of only 254 pages Mason has accomplished this task with astonishing success.

In opening each question he usually offers at least a glimpse of its historical development and proceeds to a statement of the present state of knowledge. When some aspects are in doubt he makes this fact and the basis of doubt clear, as well as indicating the additional data necessary to resolve it. Each chapter ends with a list of references, for each of which a brief résumé of content is given.

The author exhibits almost unnatural restraint. Most authors, including this reviewer, manage to refer to their own writings as often as is reasonably possible, but the name Mason does not appear in the index of the book, although the author has made significant contributions to crystal chemistry and geochemistry.

All in all, it is an excellent book—a model of incisive, authoritative, and lucid scientific writing.

NORMAN L. BOWEN
Geophysical Laboratory
Carnegie Institution of Washington

Smithsonian Logarithmic Tables to Base e and Base 10. Smithsonian Misc. Coll., Vol. 118, Pub. 4054. Compiled by George W. Spenceley, Rheba M. Spenceley, and Eugene R. Epperson. Washington, D. C.: Smithsonian Institution, 1952. 402 pp. $4.50.

These tables are an adaptation of Hoüel's factorization method of computing logarithms to many places. Tables I and II give the natural and common logarithm to 23 decimal places of $XXXX$, 1.0^3 $XXXX$, and 1.0^7 $XXXX$, the range of $XXXX$ being from 1 to 10,000.

The natural logarithm of N is found as follows: N is expressed in the form $N = ABCDE$, where A con-

sists of the number $XXXX$ formed by the first four digits of N; B, C, and D are numbers of the form 1.0^3 $YYYY$, 1.0^7 $ZZZZ$, 1.0^{11} $WWWW$, respectively; and E is the power of 10 necessary to make A a four-digit number without decimal point. The tables give ln A, ln B, ln C; ln E is found by inspection; ln D, from the approximate relation ln $(1 + x) \approx x - (x^2/2)$; and ln $N = $ ln A + . . . + ln E. The error in the 23rd place of ln N does not exceed 0.5. Common logarithms are found similarly. Antilogarithms are found readily by the inverse of the process outlined above.

The tables are well bound in a convenient desk size $(9'' \times 6'')$ and are easy to read and use. Those who have either occasional or frequent use for logarithms that are accurate to many places will find the tables a welcome addition to the literature—particularly since, for the first time, logarithms are given to 23 places in a concise manner.

The book under review is an extension of certain work done by the senior author in conection with the preparation of the *Smithsonian Elliptic Functions Tables* (1947). All the calculations made to produce the tables were done by hand or on hand desk calculators having 10 columns of 10 keys. This is unusual in these days when large-scale digital engines are commonly used for computing tables. It is indeed an inspiration to know of the painstaking scholarship and the devotion on the part of the authors and their assistants that have gone into the successful preparation of these new tables. Miami University, the Smithsonian Institution, and the Research Corporation of New York are to be commended for their part in helping to make possible the publication of this excellent work.

RICHARD S. BURINGTON
Bureau of Ordnance, Department of the Navy

Electrical Measurements. Forest K. Harris. New York: Wiley; London: Chapman & Hall, 1952. 784 pp. $8.00.

This book is intended for the student of electrical engineering or of physics, who thus has some acquaintance with the theory of electricity and of electric circuits and a background of mathematics through the calculus. Since the author gives a rather thorough discussion of the topics he covers, he limits the content to direct-current and low-frequency measurements. In particular, the range of topics includes general theory of measurement and electrical units, d-c galvanometers, d-c ammeters and voltmeters, potentiometers, resistance measurements, ballistic galvanometers, magnetic testing, a-c ammeters and voltmeters, power and energy measurements, instrument transformers, waveform and frequency measurements, and a-c bridges.

The author assumes that the student using the book will have a truly professional interest in electricity, that he will not be content to accept without question