available records of these methods, and by personal visits to many of the continental research stations he has equipped himself with the latest relevant information. He has subjected the various methods to mathematical analysis, and has applied most of them to the measurement of certain plots in which all the trees were felled to allow of accurate volume determination, by which means he has obtained useful empirical evidence as to their relative reliability.

Mr. Chaturvedi also propounds a new method which aims at combining the good points of several other systems. This method avoids felling any excessive number of trees, and is well worth testing carefully in the field. W. E. H.

Tables of Physical and Chemical Constants; and some Mathematical Functions. By Dr. G. W. C. Kaye and Prof. T. H. Laby. Fifth edition. Pp. vii + 161. (London: Longmans, Green and Co., Ltd., 1926.) 14*s.* net.

SIX years have elapsed since the publication of the fourth edition of these invaluable tables, and it is significant of the change in scientific outlook that the first page of the book is now devoted to atomic numbers and the last to a new table of isotopes. In the list of elements in the order of atomic numbers, three numbers only, 61, 85, and 87, are still unrepresented; the first of these gaps will now be filled by the new element illinium, the isolation of which was reported in NATURE of June 5, 1926, p. 792. New matter has been added on the mechanical equivalent of heat, a subject which Prof. Laby has personally investigated, and the weighted mean of the determinations of Joule's equivalent made since 1880 is given as $4{\cdot}182 \times 10^7$ ergs per 20° calorie on the scale of the hydrogen thermometer.

The reviewer turned eagerly to the value assigned to Planck's constant, h, only to find that the authors have made no attempt to discriminate between the various experimental values quoted. Even the critical discussions by Ladenburg and by Birge are not referred to. The true value is probably very near to Planck's original estimate, $h = 6{\cdot}55 \times 10^{-27}$ erg sec. The same cautious attitude is adopted in the value quoted for the fundamental electron charge, which is given as $e = 4{\cdot}77 \times 10^{-10}$ e.s.u., with a reference to Millikan, July 1917. It may be suggested that in future editions more attention should be paid to spectroscopic constants—even Rydberg's constant does not appear to be mentioned—and other important constants associated with the quantum theory. Scientific workers owe a debt to the authors of this volume, which only those who have attempted to collect such numerical results can fully appreciate. H. S. A.

The Evolution and Development of the Quantum Theory. By N. M. Bligh. Pp. 112. (London: Edward Arnold and Co., 1926.) 9*s.* net.

PROF. MAX PLANCK, whose photograph adorns its frontispiece, contributes a short foreword to this little book. The author sets out with the praiseworthy object of producing a "concise handbook" for the "general scientific reader." In Part 1 he sketches the classical arguments leading to Wien's radiation law and the Raleigh-Jeans law, and describes how their disagreement with each other and with experiment led Planck to his formula and law. Part 2 is a description, which does not profess to be complete, of some applications of the theory; band spectra, for example, are barely mentioned in two sentences. Planck's second hypothesis and a somewhat irrelevant discussion of Nernst's heat theorem, however, fill a whole chapter. The chapters on the light quantum hypothesis, specific heats, and optical spectra, though of necessity brief, are good.

Unfortunately, the author is much at sea in radiation theory and statistical mechanics. Chap. i., his introduction to radiation theory, is so involved that it would be almost unintelligible to any one unfamiliar with the arguments used, and the proof of Wien's displacement law in Chap. ii. is still worse. In Chap. iii., on statistical mechanics, the preliminary explanation is worthless, while the proof of Maxwell's distribution law contains ". . ., let δn be the number of molecules having velocities whose x-components lie between u and $u + \delta u$"; and later, "$\Sigma \delta n = 0$," no distinction being made between that number and its variation. There is a considerable number of mis-statements, such as "A complexion is thus the number of ways in which a particular arrangement can be carried out," and "Now since the mass of the helium nucleus is slightly greater than that of the hydrogen nucleus," and misprints are frequent.

Animal Ecology. By Prof. A. S. Pearse. (McGraw-Hill Publications in the Zoological Sciences.) Pp. ix + 417. (New York: McGraw-Hill Book Co., Inc.; London: McGraw-Hill Publishing Co., Ltd., 1926.) 20*s.* net.

THE science of animal ecology is relatively new, but a considerable amount of attention has been directed to this aspect of zoology since the beginning of the century. In this development American biologists have played a leading part. We recall Shelford's valuable work on the animal communities in temperate America and Adam's useful guide to the study of ecology in this connexion, both of which gave a tremendous impetus to the study of animals in relation to their environment. Most of our knowledge of the subject is, however, contained in short scattered papers through a vast range of periodical literature or in more specialised works dealing with particular groups.

Some guide to this maze of literature was clearly needed, and Prof. Pearse has rendered conspicuous service in undertaking this task. His book seeks to indicate the scope of the subject and to outline its various sub-divisions. The treatment is of necessity brief, but with the aid of a comprehensive bibliography the reader is directed to fuller details regarding any particular aspect of the subject. The book should serve a useful purpose as a work of reference to university teachers and students in presenting to them a broad and orderly survey of a very large field.