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PHYSICAL, CHEMICAL, AND
ENGINEERING CONSTANTS.

Tables Annuelles de Constantes et Données Numériques de Chimie, de Physique et de Technologie. Volume ii., Année 1911. Pp. xi+759. Price 28s. 6d. net. Volume iii., Année 1912. Pp. lii+595. (Paris: Gauthier-Villars et Cie.; London: J. and A. Churchill, 1914.) Price 28s. 6d. net.

THESE volumes are a continuation of the new annual tables of physical, chemical, and engineering constants, the publication of which was commenced by an influential International Committee in 1910; they contain the data for the years 1911 and 1912 abstracted from a very large number of scientific periodicals. One of their most commendable features is that memoirs are not passed over even when their titles do not indicate them as sources of new constants. The abstractors have indeed no light task in the collection of the large amount of information constituting in a single volume the results of a year's research by the laboratories of the entire world. While the basal language of the book is French, the preface, headings to the pages, and the excellent indexes are also printed in English, German, and Italian.

When the first volume of these "Tables Annuelles" was published one was inclined to look forward with dismay to the prospect of being obliged when requiring a physical constant to search for it not only in some general book of tables, but in a series of volumes, increasing in number each year. But during the short time which has elapsed since their publication, they have become indispensable to every well-equipped science library, it being understood that their use is supplementary to that of one or more of the standard works of reference. It may be of interest to point out that since the issue of vol. i. there have been published of works on physical constants the large work of the late Mr. Castell-Evans, the useful small book of Kaye and Laby, and the fine volume issued by the Société Française de Physique, edited by Profs. Abraham and Sacerdote; also a new edition of "Landolt and Börnstein," more bulky than ever, and two new editions of the well-known Smithsonian Tables, in the last of which the rather numerous printer's errors occurring in its predecessor have been corrected.

The two volumes under review bear signs that the experience gained by the compilers has enabled them to introduce a number of improvements, and

a careful examination of the books has revealed only comparatively few errors.

One of the latter is that experience with an electrically heated salt-bath, employing a mixture of KCl and NaCl, indicated that Mr. Dutoit's figures on page 518 of vol. ii. for the conductivity of these mixtures at the higher ranges are given a hundredfold too great; $K \times 10^8$ at the head of the column should apparently be $K \times 10^6$.

The staggering statement on page 408 of the same volume that Cambridge tap water contains 135×10^{12} grams of radium per litre would, if true, delight the heart of many others besides Sir J. J. Thomson and Mr. Satterly. Obviously 10^{12} should be 10^{-12} .

A list of a few other inaccuracies has been sent to the compilers. In spite of these almost inevitable slips we have little fault to find with the volumes, the general usefulness of which is undoubted.

In vol. ii. the division relating to spectroscopy, consisting of more than 150 pages, is unusually complete. No fewer than 30 pages are devoted to the Zeeman effect alone, while the results of the work of King, of Duffield, and of Rossi on the effect of pressure are tabulated in detail.

In vol. iii. the ground covered seems to have been still further extended, large physiological and biochemical sections being added. It would not, however, be safe to presume that though one finds on page 488 "Lait—Densité 1.0270-1.0326" the heading a few pages later, "Propriétés des Laitiers" (page 530), implies that the milkman also has been included.

The volumes indicate how great is the progress now being made by research, and render much otherwise difficultly accessible material very generally available.

The compilers kindly offer in the preface to vol. iii. to place their services at the disposal of readers requiring further information as to data in periodicals to which they have not access.

In view of the necessarily bulky character of these volumes an excellent innovation is the issuing of a number of the more important sections of vol. iii. in separate parts. A reader can thus acquire the advantages of possessing the data on the portions in which he is specially interested, without being obliged to buy the whole work.

In conclusion, we venture to hope that the idea of the committee of issuing every five years or so a *critical* summary volume, in which an attempt will be made to sift out the wheat from the chaff and assess the relative value of the various discordant determinations, will not be lost sight of. The need for it becomes continually more apparent.

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