THURSDAY, MAY 13, 1915.

PHYSICAL CONSTANTS.

Société Française de Physique, Recueil de Constantes Physiques. By Prof. H. Abraham and Prof. P. Sacerdote. Pp. xvi+753. (Paris: Gauthier-Villars, 1913.) Price 50 francs.

THIS large and handsome volume of 753 pages is a collection of physical constants compiled under the auspices of the French Physical Society by Profs. Abraham and Sacerdote, and printed in the excellent style with which one is familiar in the publications of Messrs. Gauthier-Villars.

Following the custom of the more recent editions of Landolt and Börnstein's Tables and the new Annual International Tables of Constants, the work has been divided among a number of specialists, and each page bears the name of the individual responsible for it.

The system adopted has particular advantage in a volume planned with the idea of giving in general only one value for each constant. Reference is usually given to the name of the authority cited and the year of publication, but the source of the particular information is not specified. A useful explanatory paragraph with formulæ generally precedes each table.

A novelty is the introduction of a large number of curves. For example, the curves of the physical properties of gases given by Amagat impart at a glance an amount of information which would have required a table of many columns. Some very fine reproductions of spectra are given, including a large-scale reproduction of the iron spectrum, which should be extremely useful.

An examination of the book and frequent reference to it for constants required in actual work has revealed only few errors, and on the whole the work of the compilers appears to have been well done and the subject matter judiciously chosen.

Among the more interesting novelties are the useful sections devoted to wireless telegraphy and to physical measuring instruments, and no one could have been found to write with more authority on alloys than M. Le Chatelier.

Some eccentricities appear in the initial table on units; few physicists are familiar with such terms as "volume massique" and "masse volumique," "degré carré," and "steradian."

In the table of the specific heat of water the results of nine different observers are given, in most cases to four decimal places. But the "valeurs combinées" are given to five places, although examination of the individual values

shows large discrepancies in the third decimal. It is much better to avoid in a case of this kind a fallacious air of precision, and it would have been wiser to have followed the example of Commandant Defforges, the well-known authority on pendulum observations, who told an eminent physicist with whom he was discussing his work:—

"Each year, as I know a little more of the difficulties, I suppress a decimal place in my results."

A good feature of the index of organic bodies is that in many cases the common name of a substance is given as well as its other names, perhaps only adopted by the chemists during a period of some passing fashion. For example, benzophenone is to be found in the index, as well as its synonyms, diphenylmethanone, diphenylketone, and benzoylbenzene. On the other hand, formaldehyde is *not* to be found, although four other names of this body appear in the index.

It is, however, surprising to find repeated the old familiar error, the confusion of benzine and benzene, words which in no language mean the same thing, although in some their pronunciation is unfortunately identical.

In some cases almost too much information is given. Thus, for example, the work of Tammann and his associates on the influence of pressure on the melting point of a large number of substances is quoted in detail, while practically nothing is to be found on the even more important effect of pressure on the boiling-point, excepting for a few organic bodies. For dp/dt for sulphur vapour is given Regnault's old value, 0.82° per mm., now known to be considerably too low.

Perusal of a work of this magnitude is suggestive in showing how great is our ignorance in many important branches of knowledge, where it might have been imagined much more precise and accurate data would have been to hand. A good example is the subject of thermal radiation, transparency, etc., where we still depend on Leslie, Rumford, Melloni, and other pioneer workers, who showed the way, where comparatively few have followed to repeat their work with modern appliances.

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THE PRESERVATION OF WILD LIFE IN AMERICA.

Wild Life Conservation in Theory and Practice.

By Dr. W. T. Hornaday. Pp. vi+240. (New Haven: Yale University Press; London: Oxford University Press, 1914.) Price 6s. 6d. net.

NORTH AMERICA, when first opened up by Europeans, possessed a big-game fauna which, although poor in species, in point of numbers was equalled only by that of southern and