

with the application of thermodynamics to liquid-gaseous systems containing more than one component. Although the phase rule and the theory of dilute solutions (from the osmotic point of view) are discussed at some length, the greater part deals with the problems of phase equilibrium from the points of view and by the methods with which one associates the name of van der Waals himself. The book is divided into two main parts, first, the consideration of systems in the absence of external forces, chemical or capillary effects, and secondly, the behaviour of systems when exposed to such forces. The work requires no introduction to English readers. The fundamental nature of the subject itself, and the fact that it emanates from the greatest living authority upon this subject, ought to provide a sufficient reason for every physicist and physical chemist becoming acquainted with it.

(5) Planck's thermodynamics is already so well known to readers in every country that it is only necessary in this place to direct attention to the appearance of the (enlarged) French translation of the third German edition. It would be utterly futile to attempt any worthy review of this book in the space of a few lines. A very interesting feature of this edition is the incorporation by the French translator of the lecture on Nernst's theorem and the energy quanta hypothesis delivered by Prof. Planck in December, 1911, before the German Chemical Society, and also a list of the papers on thermodynamics published by Prof. Planck with cross-references to the paragraphs of the book in which the same subjects are treated. The work is divided into four parts: the first deals with fundamental experiments and definitions, the second and third with the first and second laws, whilst the concluding part takes up the application of those laws to special physical chemical cases. The last chapter of this part is devoted to the discussion of the absolute value of entropy (Nernst's theorem). As an illustration of the place which Planck's "Thermodynamics" occupies, it may be mentioned that a fourth German edition has already appeared this year. It is high time that the English translation was brought up to date.

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#### OUR BOOKSHELF.

*The Annual of the British School at Athens.* No. xviii. Session 1911-1912. Pp. viii+362+15 plates. (London: Macmillan and Co., Ltd., n.d.) Price 25s. net.

THE eighteenth volume of the Annual of the British School at Athens for the session 1911-12  
NO. 2296, VOL. 92]

is fully up to the level of this excellent series. The chief archaeological article gives an account by Messrs. A. J. B. Wace and M. S. Thompson of the excavations at Halos, one of the smaller and less-known cities in Thessaly. A group of tombs at the foot of the acropolis was opened. Such cist graves formed of slabs are common in Thessaly, both in the fourth prehistoric period and in the Early Iron Age, to which the Halos tombs belong. Here there is no sign of cremation, simple inhumation being the only process. On the other hand, the excavation of a neighbouring tumulus proved that here corpses were burned. Thus in these two cemeteries we find two different methods of disposal of the dead. From an examination of the pottery and fibulæ it seems clear that the cremation tumulus is of a date later than that of the cist graves, and it may be referred to the middle of the so-called Geometric period, about the ninth century B.C. No exact parallel to this type of cremation burial has yet been found in Greece or elsewhere, and it differs from that of Halstatt and the rites described in the Homeric poems in some important particulars. The tumulus is clearly post-Homeric, and may be an Achæan burial in a degenerate or modified form.

Mr. M. N. Tod's paper on Greek numerical notation is of special importance. By a review of the epigraphical evidence he seeks to determine the numerical systems employed in the various Greek cities, and to state afresh some of the conclusions which we are entitled to draw from it. This paper is devoted only to the so-called "acrophonic" or "initial" class of numerical notation, the consideration of the other main type, in which the letters are used in their alphabetical order as numerical signs, being reserved for later treatment. The earliest example of this type appears to belong to the fifth century B.C., and the diversity of the systems employed in the various cities seems to be due to the modifications introduced into the pure numbers to make them capable of expressing money, weights, and measures. The detailed epigraphic evidence thus presented deserves the attentive study of students of the early history of mathematics.

*The New Encyclopædia.* Edited by H. C. O'Neill. Pp. vii+1626. (London and Edinburgh: T. C. and E. C. Jack, n.d.) Price 7s. 6d. net.

THIS encyclopædia is handy in shape and fairly light in weight, and considering the limits of size, it appears to be as complete and authoritative as can be expected. The expert in any branch of knowledge may note the omission of facts which he might think could have been included, but the general reader will find brief summaries on many topics. He will, therefore, find this volume useful, and will be able to continue his studies under the guidance of the bibliography which is appended to the more important articles. The information appears to be accurate and modern, but some of the less informative maps might have been omitted.