NEW BOOK.

Die Thermodynamische Berechnung Chemischer Affinitäten von Homogenen und Heterogenen Gasreaktionen. By IVAR W. CEDERBERG, Privatdozent in the University of Stockholm. 109 pp. Berlin: Kommissionsverlag von R. Friedländer und Sohn, 1916.

This is another attempt to calculate affinity constants .(free energy) from the so-called chemical constants of Nernst. The method is one which is familiar to readers of recent literature in the field of applied thermodynamics, and the author introduces no new experimental material. It is unfortunate that the probably correct principle of the additivity of entropies at the absolute zero has been obscured by numerous attempts to calculate free energies from the chemical constants obtained by a study of the physical properties of gases. The author recognizes the failure of these earlier attempts and proposes some modification of the Nernst method which permits a closer approximation to experimental fact. He does not, however, see the fundamental difficulty in any such method, a difficulty which is due to the fact that two equally satisfactory empirical equations for the specific heat of a gas lead to two widely different values of the constant in the free energy equation. The chemical constant of a substance like carbon dioxide or water vapor cannot, at present at least, possess any real significance. In the present state of the subject we can hardly expect our knowledge of chemical affinity to advance, except through the further exact determination of chemical equilibrium, and of thermal quantities from the highest to the lowest temperatures. In the meantime, anyone wishing to acquaint himself with the methods employed in the Berlin laboratory, will find this a sane and readable treatise.

GILBERT N. LEWIS.