SCIENTIFIC BOOKS

NATIONAL UNITY AND DISUNITY

National Unity and Disunity. By GEORGE KINGSLEY ZIPF. xix + 408 pp. Bloomington, Ind. The Principia Press.

THIS is an interesting book. In it Dr. Zipf reports his discovery that in the United States and certain other nations at certain periods the population sizes of cities and towns form approximately a harmonic series, so that the rank of the city times its population size is a constant. This discovery may rank with Quetelet's discovery that the statures of men are distributed in accordance with the so-called normal probability curve. Dr. Zipf is greatly to be congratulated upon his perspicacity in making it.

He shows how the specialization of wealth and labor and the prevalence of exchange must produce an organization of the population into communities with some inverse relation between population-size and the number of communities, though this inverse relation could have many forms other than that of the harmonic series. Nobody, I judge, will dispute this. He argues that the distribution of communities to form a harmonic series must be related to and significant of something in the organization of a nation's life and work. Nobody should dispute this, though there will be many opinions about just what it signifies. He then argues that such a distribution to form a harmonic series signifies an "equilibrium" in a nation's affairs, and that such an equilibrium will tend to restore itself if it is disturbed by any force. "We shall find that any disturbance to the equilibrium of any social-economic system tends automatically to set forces in operation within that system to repel the source or to neutralize the effect of the disturbance in order to restore equilibrium" (p. 145). Though this doctrine will appeal to many sociologists, and to some biologists, it seems to the reviewer to be unwise, especially the second half of it. The valuable factual material relating the distribution of community sizes in various nations at various periods can, I think, be studied better without assuming any potency whatever in an "equilibrium" as such.

Dr. Zipf is led by his reflections on the harmonic series as a product of the social-economic organization of a nation to many comments of a more or less speculative nature on divers topics in history, sociology and government. I quote a few of them chosen almost at random:

"A nation may very well be a natural bio-social entity, quite comparable, in fact, to that of a colony of ants, or of bees, or of termites" (p. v).

"American paranoid tendencies may be felt to have reached their highest point in the last World War when the whole country, under an attack of mass-hysteria, crusaded 'to make the world safe for democracy' with all the delusions of grandeur, utopia, persecution and self-righteousness that are the stereotyped symptoms of this most vicious of mental diseases" (p. 79).

"As for the hope for a single world-wide all-inclusive homogeneous superstate with a single capital, the author finds no historical nor dynamic justification for it" (p. 182).

"Boundaries can be drawn" [in treaties or other agreements between nations] "in such a way that those living within the remaining boundaries and desirous of surviving can in fact survive only by reversing either (1) the physical laws of nature, or (2) the biological laws of nature, or (3) the psychological laws of nature" (p. 205).

"The author suspects that the cyclical business disturbances ('business cycles') of the past and present may conceivably be attributed in part to the alternation between an 'elite' and the 'entire nation' as the 'right number' for which the goods of society are produced" (p. 318).

"Indeed the turmoil of war and strife are perhaps to be viewed primarily as the correctives and 'cures' of maladjustments, rather than as their causes" (p. 404).

Opinions of experts in history, economics, government, psychology and sociology will vary widely concerning most of the dicta of which these are samples.

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TEMPERATURE

Temperature. Its Measurement and Control in Science and Industry. American Institute of Physics. xiii + 1362 pp. New York: Reinhold Publishing Corporation. $11.00. 1941.

IN 1919 the American Institute of Mining and Metallurgical Engineers sponsored a Symposium on Pyrometry under the chairmanship of the late George K. Burgess. The resulting volume of papers, now long out of print, became one of the standard source books on temperature measurement. The book under review is likewise the published record of a symposium, but of considerably greater scope than the 1919 undertaking. Instead of being confined to temperatures above 500° C, it covers the whole range from absolute zero to stellar temperatures, and from highly "theoretical," *i.e.*, logical, considerations on thermodynamics through to the most practical instructions on how to control a furnace temperature when one is compelled to.

As might have been expected, the resulting 126 papers by 160 authors differ greatly in length, in interest and particularly in pertinence. The contributions by the high- and low-temperature physicists stick closest to the theme of the book; they are the least readable, and will be found ultimately the most useful. The contributions by the biological group are the most