seem to have missed a rather important implication of the word "normal." Attention was called to this in a short, recently published note on physiological standards (*Fed. Proc.*, 1946, 5, 61). It is too often the custom to refer tritely to physiological standards as "normal." This suggests presumptuous connotation of what ought to be. Such standards are merely averages or means of various observations on different, presumably healthy organisms. To refer to such averages as "normals" causes semantic and practical confusion. Physiological averages or means are scientifically descriptive. We are as yet in no position to attempt to agree on what physiological standards ought to be. Such an attempt, involving possible purposes, may be an ethical proposition, for which scientific descriptive data are necessary, but merely as one factor to be considered. Physiological standards may be established by appropriately scientific and descriptive methods. The normative approach to such standards is not yet appropriate.

It is important for scientists to remember that "normal" has a technical significance in ethics. It implies generally what "ought to be." This meaning is generally associated with the term, resulting in practical difficulties when scientists use the word "normal" to refer to a descriptive average. It is as important for scientists to be as precise in terminology as in measurement.

CHAUNCEY D. LEAKE
University of Texas Medical Branch, Galveston

Iron Concentrations in Cholinesterase Preparations

It is desired to call attention to the presence of iron in some cholinesterase preparations. Those who have available such preparations may wish to examine them for contained iron in order to reach a conclusion as to whether the metal is a contaminant or an intrinsic part of the enzyme.

On pharmacodynamic grounds it was postulated that cholinesterase was a heme compound (*Proc. Soc. exp. Biol. Med.*, 1943, 54, 254). The arguments advanced for the heme nature of this enzyme would hold as well for the presence of a prosthetic nucleus containing any one of the transitional metal elements. The crucial argument is the marked antiesterase effect of fluoride ion which forms (usually) undissociated polar compounds with such elements.

Interest attaches, therefore, to the fact that crude cholinesterase preparations from three different sources have been found to contain iron in concentrations concomitant, if not proportional, to their esterase activity. A sample of electric eel material obtained from Dr. Howard M. Fitch, of New York University, 1 mg. of which hydrolyzed 1,200 mg. of acetylcholine per hour, had an iron content of 47.3 mg. per cent; a serum esterase preparation furnished by Dr. John H. Northrop, of the Rockefeller Institute for Medical Research, which split 20 mg. of acetylcholine per mg./hr., had 19.8 mg. per cent of iron; while a human erythrocyte cholinesterase prepared here, with an esterase activity of 7.8 mg. per mg./hr., had an iron content of 9.0 mg. per cent.

The iron contents of these esterase preparations are higher than have been found in esterase-free crude globulin concentrates, and this suggests that the iron either is concentrated along with the esterase fractions or comprises an actual component of the latter.

ROBERT D. BARNARD
Fox Hills, Staten Island, New York

Hypoparatypes

There has long been a general need for a recognized category for the "less typical" specimens which authors frequently use in arriving at their concept of a new species. Not infrequently certain specimens, although available to authors at the time of or prior to their proposal of species names, for various reasons are of such a nature that they cannot appropriately be named paratypes, with the implication that the latter name carries of being wholly adequate for subsequent comparisons by the same or other authorities. They are satisfactory neither as holotypes nor as paratypes; and at the present time these are practically the only terms in general use for the original series, at least in the field of vertebrate taxonomy. Yet it is only fair to the readers for whom the accounts are intended that all material be recorded. With recognition of an additional category, immature, injured, incomplete, or specially treated specimens might be listed without incurring the liability of their interpretation by others as "paratypic" material (in the above sense).

Accordingly, it is suggested herewith that specimens not wholly representative be regarded and listed as *hypoparatypes*. This term is defined as a category for specimens upon which an author originally bases his concept of the species newly named, but which are neither the single, select specimen (holotype) nor the other specially designated specimens (paratypes) serving as his chosen representatives of the presumed species.

The term suggested is a modification of *hypotype*, which might well be construed to have the same meaning as that proposed for hypoparatype. The former word has generally been applied, however, to subsequent, not concurrent, supplementary material; its use varies so considerably that substitution for hypoparatype would clearly court misunderstanding. No other term has been proposed, so far as I am aware, with the desired meaning.

HOBART M. SMITH
Department of Fish and Game
A. and M. College of Texas

Rigid Thinking in the Social Sciences—A Vital Need

G. F. Hull has given us a most enlightening review of the development of physics in the United States (*Science*, 1946, 104, 238). However, his sociological observations are hardly in line with the general excellence of his presentation.

"The scientists of this Nation," he asserts, "are not likely to make war on this or any other nation." It goes

without saying that neither will the physicians of this Nation, nor the teachers, nor, for that matter, the plumbers or the bartenders. Nevertheless, all of these were embroiled in the recent carnage, and the physicists were in the thick of the fight. Significantly enough, Dr. Hull's paper is preceded by a description of a gigantic naval research institution (p. 237) in which some 2,000 civilians, most of them scientists, will be sharpening the modern swords of war. When the bombs fall, scientists too, as well as their children, will die. As citizens, they cannot afford to assume a holier-than-thou attitude.

Dr. Hull also takes occasion to assert that the rulers of the country are "the so-called labor leaders, who, when the situation is right, make war on the rest of the Nation and who, at times of national emergency, hold up the Nation and demand its money or its life."

Now, anyone who, in the realm of physics, made a generalization so unwarranted and so oversimplified would be dismissed as one who had failed to assimilate the most elementary principles of scientific analysis. It cannot be repeated too often that the obvious need today is as rigid thinking in sociology as that which has been so fruitful in the physical and biological sciences.

ZACHARIAH SUBARSKY

High School of Science, The Bronx, New York

On the Question of Russian Scientists

Why the presumptuous agitation over the status of scientists in Russia—more specifically over the fate of a small number of individuals and more particularly Vavilov? The latest installment is that of P. J. Olson (*Science*, 1946, 103, 656).

If scrutinized, our own record regarding political and social undesirables is far from savory. We have had abundant evidence that scientific endeavor is flourishing in Russia. For a recent report see the articles by Hastings and Shimkin (*Science*, 1946, 103, 605, 637) and also that by Langmuir (*Chem. eng. News*, 1946, 24, 759). The treatment received by the latter in the helium liquifying laboratory of Kapitza compares rather to our discomfiture with that accorded by Bridgman, of Harvard, to visiting Soviet scientists (*Science*, 1939, 89, 179). Can it be that the Russians are more tolerant?

It is conceivable that foreign scientists contemplating migration to Russia could with propriety make detailed inquiries at to what their status there would be. The rest of us can well leave to the Russians their struggle to devise a tolerable existence. And so doing does not preclude friendly intercourse.

WILLIAM MARQUETTE

Pleasantville, New York

Book Reviews

Electron and nuclear counters—theory and use. **A. Korff. New York: D. Van Nostrand, 1946. Pp. vii + 212. (Illustrated.) $3.00.**

This very timely treatise on the theory of the discharge mechanism and on the operation of various types of electron nuclear counters will prove a valuable reference book to all scientists engaged in pure or applied nuclear research and a necessary text for students preparing for research in these fields. Its importance is enhanced by current interest in the utilization of atomic energy in medical and biological problems, as well as in industrial and military developments.

During the last two decades counters have been developed as ionization chambers, proportional counters, and Geiger counters. But in general their behavior has been only vaguely understood and has proved perplexing to the majority of workers, partly because no single text has heretofore existed giving a complete and systematically presented theory of their operation. Consequently, Prof. Korff's masterly presentation of practically all phases of counter operation promises to be the handbook which will clarify the operational problems of counter technicians.

The author introduces his subject through a summary of the development of counters, a description of current uses, definitions of terms, and a general description of the phenomena involved. The unique behavior of counters in the low-voltage region, in the proportional region, and in the Geiger region is clearly defined, and the types of counters used in these separate regions are treated according to their distinct characteristics.

The characteristics of counters currently employed for measuring the intensity of radiations—X-rays, gamma rays, and cosmic rays, for counting the charged particles and neutrons, both fast and slow, which are emitted in atomic transmutations and disintegrations, for the detection of radioactive deposits by the geophysicist or radioactive tracers by the biophysicist, or for the measurement of dosage in radium therapy are discussed in the text with ample detail. Included are characteristic curves for the various counters, discussions of self-quenching and non-self-quenching counters with explanations of pulse size and effects of negative ions, as well as directions for the construction of counters and of the auxiliary electronic circuits.

Particularly valuable are the numerous circuit diagrams and the discussion of the vacuum tubes employed for quenching, coincidence, scaling, and recording cir-