

Komatsu concludes with a review of present linguistic views about the origins and continental affiliations of the Japanese language, which structurally and to some extent phonetically comes closest to the Korean language. The book was evidently not designed for scholars interested in checking additional sources for there is no bibliography, but the reader may be assured that the statements in the book can be backed up by an impressive scientific documentation, almost all in Japanese. The author might well have indicated at least one or two publications which would lead an interested reader to this abundant literature.

GORDON W. HEWES

Department of Anthropology,
University of Colorado

Human Physiology

Physiologie. vols. 1, 2, and 3. vol. 1, *Introduction historique; Les fonctions de nutrition* (958 pp., F. 80); vol. 2, *Système nerveux; Muscle* (1101 pp., F. 95); vol. 3, *Les grandes fonctions* (1201 pp., F. 95). Charles Keyser, Ed. Editions Médicales Flammarion, Paris, 1963. Illus.

This treatise is *formidable*, in both the English and the colloquial French senses; its three volumes total over 3200 pages, making it probably the most exhaustive, up-to-date presentation of human physiology available. In several respects, it is intermediate in scope and detail between the standard textbooks used in the United States and the as yet incomplete *Handbook of Physiology* published by the American Physiological Society.

Volume 1 provides a brief historical introduction followed by the section on the functions of nutrition which considers the kidney and body fluids and includes an extensive chapter on endocrinology as well as the discussions of bioenergetics, digestion, nutrients, and intermediary metabolism ordinarily expected in this category. Volume 2 is devoted entirely to nerve and muscle. The long and thorough chapter on the electrochemistry of the neuron (by Marx) and the separate chapters on sleep, phonation, and spoken language are especially noteworthy. Volume 3, includes consideration of respiration, circulation, reproduction, fetal and neonatal life, and growth. This volume con-

cludes with a brief chapter on immunology. Volumes 1 and 2 each have their own indexes, and volume 3 has a most useful cumulative index. The table of contents is at the back of each volume, a quite common procedure in France.

The bibliographies are extensive and international in scope. Some chapters contain references no more recent than 1957, but in general the material is up to date as of 1962, presumably the time at which the volumes went to press. An unfortunate error led to the omission of the bibliographies to the chapters on smell, taste, and vision. The anguish of editors endeavoring to collate manuscripts from collaborators is well known, but in addition to writing his own four distinguished chapters, Charles Kayser, the editor, has displayed remarkable talent for organization (and diplomacy) in assembling a work of this size in virtual synchrony.

The volume of material covered and the obviously great effort brought to bear by the contributors makes it especially difficult (and loftily presumptuous) to present an evaluation in a short review. Only impressions, supported by examples, are possible.

Certainly the best aspect of this work is the great detail with which many topics are discussed. This has resulted in a very long book, but it is clear that each of the 40 contributors must have been able to write his section with very much less than the usual pressure from editor and publisher to "keep it under 10,000 words." For example, the magnificent chapter on respiration (by Dejours) occupies 245 pages, which alone would represent 20 percent of one of our standard texts. There are also good discussions of some topics ordinarily omitted or treated in bare outline—for example, growth, senescence, and fetal and neonatal physiology.

There is no preface, unfortunately, and it is not clear whether the authors intended the volumes to be used in teaching or simply as a reference work; French medical schools have used American physiology texts extensively. One can imagine the mutinous dismay of medical students confronted with a work of this size, but its major defect for use as a textbook would arise from the rather rigid treatment of physiology, organ system by organ system. For example, the plasma buffers are discussed in a section on the physical chemistry of blood, the acidifi-

cation of the urine in a chapter on the kidney, and the role of the hydrogen ion as a stimulus to ventilation is described in the chapter on respiration. There is not, however, any integrated discussion of the acid-base regulation of the body or of the multiple adjustments in response to an acid or base load. But, on the other hand, it must be noted that the chapter on growth, for example, pulls together material ordinarily treated in only a fragmentary way.

Another impression is that, despite the valuable and detailed discussion in some areas, other parts of the book are curiously brief, rather as if they were written as introductory comments to more intensive treatments which the authors expected to be published in later sections but which, for some reason, were not actually written. For example, the formed elements of the blood, the blood groups, and blood coagulation are dealt with in a scant seven pages.

These volumes will be useful as supplementary extended reading material for students of physiology, provided some of the weaknesses referred to are taken into account. The style is simple and lucid throughout so that the French language should present no particular obstacle.

TERENCE ROGERS

Pacific Biomedical Research Center,
University of Hawaii, Honolulu

Modern Chinese History

Twentieth Century China. O. Edmund Clubb. Columbia University Press, New York, 1964. xvi + 470 pp. Illus. \$7.95.

Anyone who has taught a course on the history of modern China will have felt the need for a good general textbook. There are many excellent studies of particular topics or limited periods, but to make the best use of these a student needs some book which gives a general outline of all the main developments and which is also a reliable reference work for the more important facts and dates. The best work of this kind so far available carries the story only up to the Kuomintang victory in 1928.

Twentieth Century China is a disappointing book because it just misses the standards required for such a text

book. One finds a series of small points that are simply and clearly wrong. Thus, Baron Ungern-Sternberg of Mongolian fame is given a "von" in the middle of his name; Feng Yü-hsiang is listed among the Kuomintang members who remained on the mainland to work with the Communists in 1949, although he had been killed in September 1948 by a fire on a ship sailing from the United States to Russia; and so on. No one of the errors is particularly important, but their cumulative effect destroys confidence in the book as a reference work. A large part of the value of a good textbook is the time it can save in securing factual accuracy. It took me about 3 hours to find a reliable reference for Feng Yü-hsiang's death (my memory was also wrong and had put it in 1947). It would probably take even longer to check many other statements of fact which one would like to get from a good textbook.

In addition to the minor points that are clearly wrong, one finds a good many others which are somewhat misleading. Thus, Mao's speech of February 1957 on contradictions among the people is described as "confidential"; we are told that "the world will probably never know" how much it differed from the version finally published, and that publication preceded the start of the antirightist campaign (p. 350). In fact, the speech was given to an audience of about 2000 in Peking, was recorded for similar audiences in other centers, and some duplicate texts were in circulation. And the published version appeared not before but just after the start of the antirightist campaign.

Again, to understand Communist agrarian policy, it is important to realize that the policy which won large-scale support between 1937 and 1946 was very different from the preceding and the subsequent policies and was actually based on a National Government land law which the Kuomintang seriously implemented only in Taiwan. But the reader would hardly gather this from the one mention of the subject when Clubb, after suggesting that all landlords lived in market towns or county seats, says that "In their Yenan period the Communists had exercised moderation with respect to the landlords, but that reflected wartime exigencies" (p. 318).

Yet again, we are told that the Nationalists ". . . won no victories in

guerilla operations against the Japanese, for their 'guerillas,' once sent into occupied territory, with lamentable regularity defected to the enemy" (pp. 236-237). In fact, although few Kuomintang units adopted the organization needed for really successful guerilla warfare, even Communist sources report large-scale defections as starting only in 1941, and a few Kuomintang guerilla units survived into 1945. One could give many more examples of rather misleading statements, some on quite important topics.

For anyone who wants a one-volume general history of 20th-century China, this book is probably the best available. But it could have been so very much better if the author had taken a little more trouble. It must have taken at least a year's work to produce this book, and it would have taken only 1 or 2 months' additional work to check all statements of fact instead of relying on memory. Many errors could have been eliminated even more simply by asking several people working on this period to read the manuscript and to note any statements that seemed doubtful.

In an address to the AAAS, "The moral un-neutrality of science," Sir Charles Snow pointed out that a basic component of science is respect for the truth [*Science* 133, 257 (1961)]. Sir Charles went on to argue that the nature of the scientific process makes it impossible for fraud to remain undetected for long—"So that all a fraud can do is to waste the time of the scientists who have to clear it up." But this is only true when inaccurate statements are uncommon. If they become common, the time wasted in clearing them up becomes a very serious obstacle to the advancement of knowledge. In any subject, unsubstantiated statements can be compared to the "noise" of communications theory. A low noise level is comparatively harmless, but a high noise level makes it hard to transmit information. And the noise level in modern Chinese history is extremely high. For example, a few years ago a British journalist published a biography of Mao Tse-tung which was very largely pure fiction, and this biography has now started to appear as a source in students' term papers, wasting the students' time in reading the book and the teacher's time in pointing out that this book is worthless as a source. A serious historian should be prepared to undertake the effort,

which may be considerable, of sorting out "information" and eliminating "noise." This is the justification for making rather strong criticisms of a work in which the author, on a number of points, has actually added to the noise level by failing to take the trouble to check his statements.

MICHAEL LINDSAY
*School of International Service,
American University, Washington, D.C.*

Biography

Yankee Scientist: William David Coolidge. John Anderson Miller. Mohawk Development Service, Schenectady, N.Y., 1963. viii + 216 pp. Illus. \$3.95.

William David Coolidge is a physicist held in the highest regard for his professional attainment, beloved by his colleagues for his warm and gentle personality, and revered by a host of younger men who have been inspired by his truly remarkable gift of being able to concentrate his whole attention on the time-consuming and intellectually interrupting process of welcoming the constant stream of visitors who beat their paths to his door. It is a pleasure to see a biography of Dr. Coolidge appear, to call attention to the tremendous effect which this man had in demonstrating to industry the vital role that physicists may play in the industrial complex.

I have one quarrel with the organization of the biographical material, in which Dr. Coolidge's private life is largely separated from his scientific achievements. In fact, the two are so interwoven in any scientist's life that it is not only artificial to separate them but adds credence to the myth that a man's science is somehow separate from his life in society. Thus, it seems to me that Miller's separation of Dr. Coolidge's science and laboratory struggles into specific chapters tends to eliminate the human touch. Coolidge's x-ray work in the early days was so poignantly related in his own life to the tragedy of his first wife's death, and his position as head of the General Electric Laboratory so strengthened and made real by his later happy family life, that it seems an opportunity missed not to portray life as he has lived it rather than to separate it into categories.