are: (*a*) to whom am I talking? and (*b*) how can I reach his ears (eyes)? It is shortsighted for one to write in a language of narrow currency. A scientist who is convinced of the importance of his communication for science (which we take to be world-wide) will, if he is wise and free, put it in that language which will best carry his thoughts to the most people who will be interested in them. It is a question of what language gives the maximum value to the product of the following factors: author's facility in the chosen language × author's willingness × readers' facility × readers' willingness × number of prospective readers. The values of facility and willingness would be on a scale of zero to unity. One can expect author's willingness to be high and readers' willingness low. I daresay this would nearly always result in choosing English.

If however, the author is interested not in communicating with the scientific world, but in achieving fame among those who have security or profit to bestow, then he will limit correspondingly the universe of application of the three reader factors. This will usually result in his choosing his own national language.

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Book Reviews

Culture Worlds. Richard Joel Russell and Fred Bowerman Kniffen. New York: Macmillan, 1951. 620 pp. $6.00.

Culture Worlds is designed as a regional, world text for beginning students in geography. The cultural approach is used, according to the authors, as a logical method of providing a sound, unified geographic background for studies in the social sciences and other fields in contrast to the common practice of presenting a semester of physical geography followed by one in regional geography.

The authors divide the earth into 7 culture worlds, "occupied by peoples who are strikingly alien to inhabitants of other culture worlds," which are subdivided into culture realms, smaller culture regions, and zones of transition between culture worlds. The culture worlds are: "Polar World," with Eurasian and American realms; "European World," with Northwestern, Eastern, and Mediterranean realms and a western transition zone of France and Switzerland and French Barbary in Africa; "Dry World," with the Arab-Berber and Turko-Mongolian realms of Africa and Asia; "African World," treated on the basis of Herskovits' 5 culture areas to which is added a sixth, Madagascar; "Oriental World," with the Indian, Chinese (including Japan), and Malayan realms and the Indo-Chinese transition zone; "Pacific World," with Polynesian, Micronesian, Melanesian, and Australian (including New Zealand) realms; and "American World," including the Anglo-American and Latin-American realms. The expansion and impress of the European world on the other culture worlds are characterized as the "New World Revolution," whose effects on the other culture worlds are treated in detail in the individual sections.

The text is replete with information that will be of interest to people in many disciplines. Individual culture traits of each culture world are given intensive analysis from the standpoint of the social and economic patterns that have evolved. Much background material is included on racial and political antecedents of the present culture worlds and on recent political events, such as postwar territorial changes and creation of new states. Although the focus is primarily on cultural features, there is detailed discussion of the physical environments and explanation of physical processes and terms.

Mention should be made of the excellent illustrative material: 181 graphic maps and diagrams, 51 illustrations, 30 tables, and end-plate maps of the culture worlds.

Russell and Kniffen offer the reader much of interest in specific information, ideas of development of cultures and movement of peoples, and a method of treatment of the complex subject of cultural geography. Individual differences of opinion may arise regarding the authors' selection of specific culture worlds and the use of a regional, cultural approach as an introductory study of geography without a preliminary systematic discussion of cultural geography.

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Nutrition and Chemical Growth in Childhood: Calculated Data, Vol. III. Icie G. Macy. Springfield, Ill.: Thomas, 1951. Pp. 1463–2174. $8.00.

This new volume contains all the data that can be calculated from the great mass of chemical analyses of food, urine, and feces already published in Volumes I and II. The book consists entirely of tables presenting for each child studied in the first two volumes such "calculated data" as average daily absorption and retention, percentage of intake absorbed and retained, absorption and retention per kilo of body weight, per centimeter of body length, and per square meter of body surface. These calculations are given for energy, fat, nitrogen, phosphorus, chloride, sulfur, negative minerals, calcium, magnesium, sodium, potassium, positive minerals, and excess of either positive or

negative minerals. At the close of each section, averages for all the individuals studied are given in relation to body weight, length, and surface area. An appendix supplies an interpretation of each of the roentgenograms of the hands and wrists reproduced in Volume II. Tables for each child give the age of each of these bones in relation to the child's chronologic age.

This volume rounds out the series on interpretations where only a small number of the figures obtained could be included. By the use of many scales, it attempts to evaluate the processes of normal growth and development. Examination of the tables reveals the great variations in metabolism, not only in relation to age and sex but among comparable individuals, and in the same individual during rather closely spaced periods of study. The tables show that growth does not take place in a smooth, linear fashion but consists of a series of spurts with an occasional period of regression. Hence, it emphasizes once again the need of long-term studies in this field. The book should be of great interest to all those engaged in the study of growth and metabolism in childhood.

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Handbook of Human Engineering Data for Design Engineers. Techn. Rept. No. SDC 199-1-1, NavExos P-643, Special Devices Center (U. S. Navy). Medford, Mass.: Tufts College, 1949, 1951. Approx. 500 pp. $6.75.

This is the first systematic handbook of human engineering. In tables, graphs, and highly condensed discussion, it summarizes the available information on the characteristics of man that can help the engineer designing new equipment to realize the full potential of that equipment. The necessity of having such a book is given in a foreword by Admiral de Florez:

> We have now reached the point where the machine has dwarfed the man, for the characteristics of the individual —the human machine—have not changed in the memory of man and will not change for countless generations to come, while the man-made engine is capable of ever increasing power, scope, and speed of operation. . . . The human faculties of perception, action, reaction, and decision can now be taxed to such an extent that it is no longer possible to take full advantage of the machine unless the controls of the machine can be tailored to human capabilities . . . consequently the average man's capabilities must be analyzed, measured, and made available to the designer and engineer to make good our progress from now on.

The handbook makes available to design engineers those of man's capabilities that have been analyzed and measured. The four chapters on "Motor Responses" will illustrate the coverage and type of content. The first chapter gives an introductory discussion of basic concepts; the second and third cover reaction time; effect of sense used upon reaction time; effect of intensity of stimulus upon reaction time; individual variability in reaction time; factors affecting speed of movement; exertion of force; muscular aspects of steadiness; characteristics of rhythm, work, and efficiency; effect of work upon efficiency of other work; factors of the stimulus that influence control movements; efficiency of one- and two-handed work; effect of incentives on performance; and a number of similar topics. The data are presented in four graphs, 25 quantitative tables, and a number of qualitative "tables" giving data not yet, at least, in quantitative form. The concluding chapter gives a brief summary of the principles of motion economy.

Bibliographies to guide the reader to the original sources are scattered throughout the book. There are eight, for example, in the chapters on "Motor Responses." There is a detailed subject index, a separate author index, and a glossary.

Psychologists and others interested in man's capacities will find the book gives easy access to a great deal of hitherto scattered material. The Technical Publications Division of the engineering firm of Jackson and Moreland has seen to it that the data are presented in a form useful to engineers.

In 1949, an initial edition of 500 copies was distributed to a group of critics. Corrections, additional chapters, and revised indexes and glossary were distributed in 1951. With these changes the book has now become available in a second edition for general distribution. The physical design facilitates future changes and additions, for the chapters are separately paginated and the individual sheets can be removed and replaced. Titles of the nine parts already available are: "The Human Machine," "The Human Body," "Vision," "Audition," "Skin Sensitivity and Proprioception," "Motor Responses," "Physiological Conditions as Determinants of Efficiency," "Intelligence," and "Learning." There will undoubtedly be additional chapters and changes in these in the future, for there is much information that should have been included but for which satisfactory data do not yet exist. No one is more aware of these gaps than are the authors, who have combed anthropological and physiological literature as well as psychological sources for the extensive information they do present.

John Kennedy and his colleagues at Tufts College, with the assistance of the Special Devices Center and the firm of Jackson and Moreland, have produced a book of high merit for its content. But even more noteworthy is their demonstration that the time has arrived when it is worth while to begin to do for physiological and experimental psychology what the *Handbook of Chemistry and Physics* has long done for its subject fields.

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