Book Reviews

The Social Sciences: Research Methodology

Closed Systems and Open Minds: The Limits of Naivety in Social Anthropology. Introduction and conclusion by Ely Devons and Max Gluckman. Max Gluckman, Ed. Aldine, Chicago 1964. x + 274 pp. $7.95.

In this book Max Gluckman, a social anthropologist, and Ely Devons, an economist, report a methodological inquiry in collaboration with their sometime colleagues of the University of Manchester. Their study focuses ultimately on two basic problems of social science: how an investigator delimits his field of study, and whether he is justified in making "naive" assumptions about the phenomena and concepts of other disciplines which impinge on his area of inquiry.

Devons and Gluckman adopt a procedure that differs strikingly from the approach of the logician or philosopher of science in its limitation on the range of problems examined and in dealing with these problems by primary reference to five empirical essays. The contributors of these essays and the titles of the articles are: V. W. Turner, "Symbols in Ndembu ritual"; F. G. Bailey, "Two villages in Orissa (India)"; A. L. Epstein, "Urban communities in Africa"; Tom Lupton and Sheila Cunnison, "Workshop behaviour"; and William Watson, "Social mobility and social class in industrial communities."

Five procedures for demarking a field of inquiry are outlined by Devons and Gluckman. These are: (i) *circumscription*, whereby the investigator ". . . cuts off a manageable field of reality from the total flow of events. . . ."; (ii) *incorporation*, the acceptance of certain facts provided by other disciplines as "given," without further inquiry; (iii) *abridgment*, where the researcher makes use of more complex combinations of the facts of another discipline, which therefore may need to be summarized and simplified; (iv) *naivety, (a)* assumptions with respect to another discipline which specialists in that field would regard as distorted or false, or *(b)* neglecting the research and conclusions of another discipline when these are beyond the boundary of the field the investigator has circumscribed; (v) *simplification*, the reduction of the complexity of the researcher's raw data within his own field. In practice, as the authors recognize, it is often difficult to distinguish among these principles; for example, compression (that is, incorporation and abridgment) often grades into naivety.

The authors examine the effectiveness of their analytic framework by applying it to the empirical essays, devoting the major portion of their space to the problems of circumscription and naivety. Emphasizing that the investigator must limit his system at some point, they also suggest that he keep an open mind to the possibility that closure may exclude events and relationships significant to his study. However, no general rule for decisions on closure is possible, because these are a function of the problems set by the analyst. Devons and Gluckman extol the virtue of prudence in circumscription and warn the anthropologist of the danger of exceeding the limits of his competence if he casts his net too widely. The comparative study of workshops by Lupton and Cunnison is a case in point: the investigators consider that they cannot fully understand workshop behavior without taking into account the larger social and economic systems. They therefore propose a hypothesis that involves a number of interrelated economic variables which they feel may explain observed differences in collective control of output in different types of enterprises. In Devons and Gluckman's view the researchers have overextended themselves in proposing to deal with variables which are primarily economic in nature; instead of premature closure, Lupton and Cunnison expand the boundaries of their system beyond the limits of an effective social anthropological approach.

The analysis of naivety and of the consequences of transcending its limits, which the authors regard as their major innovation, is somewhat puzzling. The authors maintain that naivety is ". . . warranted and justified if the naive assumptions are not essentially involved in the analysis of the field. A fair test is to ask whether the analysis would stand if different naive assumptions were adopted" (p. 168). But if this is the case, why should the investigator make *any* naive assumptions? Presumably these assumptions would serve only an esthetic role in the investigator's analytic structure. It is difficult to believe that Devons and Gluckman are concerned primarily with the definition of an esthetic methodological component in their extended discussion of naivety. Rather, I suggest that their analysis becomes clouded when they fail to distinguish the different consequences of disregarding the "researches and conclusions of other disciplines about aspects of the events . . . [the investigator] is studying" and making *assumptions* about those events. If assumptions are made, they either play some role in analysis or they do not; if they do, it seems clear that there must be *some* consequences for analytic statements, while if they do not, one wonders why they should have been made at all.

Anthropologists familiar with Gluckman's many contributions to social anthropology will not be surprised to find that *Closed Systems and Open Minds* contains a message: the genius excepted, wise researchers will adopt a prudent policy of sound conservatism. The authors and their collaborators have raised basic issues of method; if they have not resolved these issues fully, they have developed their case in a forceful and penetrating fashion that should foster further inquiry.

HARRY W. BASEHART
Department of Anthropology, University of New Mexico

An Atlas of Bacteria

Bacteriology Illustrated. R. R. Gillies and T. C. Dodds. Williams and Wilkins, Baltimore, 1965. viii + 163 pp. Illus. $9.75.

This volume is a beginning atlas of bacteria, with color photographs of cultures and colonies grown on media especially useful in diagnosis and in differentiation together with color photographs of the organisms as seen in

the light microscope after various pertinent staining procedures. It is not electron microscopy or morphology in the sense that it illustrates bacterial anatomy and fine structure, but rather a collection of photographs that show what one will see in the laboratory when the organisms are cultivated. Atlases of this type have been very popular in the past. Such an atlas, produced by Lehmann and Neumann in the early 1900's and translated by Breed in the 1930's, became the standard work on the subject in the United States. However, most of the figures in that atlas were produced from drawings, and the colored plates were not comparable to what the student would see in the laboratory. With the development of color photography and advances in color printing, one of the present authors produced a new atlas (1947). In the production of this volume, *Bacteriology Illustrated,* advances in the art of illustrative reproduction and some editing and condensation of the material have resulted in a volume that is more usable and not so unwieldy as its predecessor. The text is very brief but pertinent.

The volume is divided into three sections. The introduction (37 pp.) covers methods of staining, cultivation, and classification. The next section (69 pp.) consists of 3- to 5-page descriptions of 16 bacterial genera of medical importance (plus 3 pages on organisms closely related to bacteria); in each case, gross morphology, staining character (either in culture or in tissue, or both), the usefulness and results of biochemical tests, and animal inoculation are considered, and about three or four color photographs of the material discussed are provided. In the third section (30 pp.), on diagnostic methods, most of the illustrations are diagrams, not photographs. In fact, most textbooks are singularly lacking with respect to good photographs of colony form and individual stained cells, largely owing to the present tendency to use electron micrographs for illustration.

The present book fills a definite need. It is well done, and the illustrations (to be viewed in tungsten light) are well reproduced and well printed. Such volumes are expensive to produce.

W. W. UMBREIT
Department of Bacteriology,
Rutgers University

National Bureau of Standards Monograph

Ionospheric Radio Propagation. Kenneth Davies. U.S. Department of Commerce, Washington, D.C., 1965 (order from Superintendent of Documents, Washington, D.C.). xiv + 470 pp. Illus. $2.75.

The National Bureau of Standards has been for many years the most important organization in ionospheric research and radio propagation prediction, and its publications are well known throughout the world. *Ionospheric Radio Propagation,* written by Kenneth Davies with the cooperation of members of the NBS staff, is an authoritative and clearly written book that will take its place as the essential basic reference work in the field. It will also be widely used in teaching, although it does not contain problems. Especially attractive is the price, only $2.75 for the 470-page, hard-bound volume with an attractive blue cover.

The volume is intended to replace *NBS Circular 462,* which has been widely used as a basic ionospheric propagation reference in the past. In comparison with the *Circular,* the present volume includes more coverage of electron production processes, the geomagnetic field, magnetoionic theory, and oblique propagation, and less coverage of frequency prediction and atmospheric noise, since they are covered in other publications. Other topics include a general description of the ionosphere and of the sun, theories of wave propagation, synoptic studies of the ionosphere, signal strength, ionospheric disturbances, scatter propagation on very-high frequencies, and propagation at low and very-low frequencies.

Ionospheric Radio Propagation is intended for research workers and communications engineers who have some background knowledge of radio propagation via the ionosphere, but the coverage is more descriptive than mathematical, and a great deal of hard information is included. The material is taken primarily from the published literature, but lecture notes from a course in radio propagation, which was given at NBS in 1961 and 1962, have also been drawn on. The book contains many useful tables and charts, such as the ARDC model atmosphere, photoionization data, world maps of the geomagnetic field, and sunspot activity curves; also included are the basic equations describing wave behavior in ionized media, meteor echo properties, sounding techniques, and the like. Perhaps the easiest aspect of this excellent volume to fault is the index. A greater use of subentries would have been helpful. For example, there is only one entry for the F2 layer, and it is followed by a list of 51 page numbers.

L. A. MANNING
Radioscience Laboratory,
Stanford University

Contemporary Biology

The Biology of Cells. Herbert Stern and David L. Nanney. Wiley, New York, 1965. xii + 548 pp. Illus. $7.95.

The Biology of Organisms. William H. Telfer and Donald Kennedy. Wiley, New York, 1965. xiv + 374 pp. Illus. $6.95.

These two volumes fill a place between the standard inclusive textbooks and the innumerable specialized paperbacks, and they do it extremely well. Their professed intent is to present contemporary biological science and to do so on a level that will challenge the interest of the better-prepared students now entering our colleges. With these books in hand, no student will have any doubt that he is experiencing instruction on a much deeper level than he found in his AIBS–BSCS courses. The material is clear, readable, and up-to-date. Both volumes are selective and, although one might occasionally wish that some other selection had been made, the choices are good choices. Moreover, it is important to remember that those old texts of the 1920's and the 1930's were also selective. The Opisthobranchs, for example, a remarkable group of mollusks with much to teach, were usually not even mentioned.

Both volumes pay some attention to the fact that science itself is a growing thing with a past and, we hope, a future. No student will find them such a thin slice of the contemporaneous that he is left holding a brittle if brilliant piece of veneer.

The authors of the volume on or-