Book Reviews

Papers of Robert Redfield

Human Nature and the Study of Society. The papers of Robert Redfield. vol. 1. Margaret Park Redfield, Ed. University of Chicago Press, Chicago, 1962. xvi + 507 pp. $10.

Margaret Park Redfield has here assembled 41 papers by the late Robert Redfield. This volume, which has an introduction by Raymond Firth, is the first of two volumes that will be published by the University of Chicago Press. The papers, of which about two-thirds have been previously published (the others were prepared for special occasions), are grouped under three headings: Anthropology as a Social Science: Methods and Principles; The Folk Society and Civilization; and Human Nature. Volume 2 will contain papers on "race, education, the 'commands of reason,' and the good life."

Redfield was one of the most influential social scientists of the past three decades, although his precise scientific position and the nature of his influence are difficult to assess. Owing to his bold, pioneering formulations and hypotheses, he was provocative even to those who disagreed with him. But he offered no rigorous methodology that afforded ready-made research tools. He considered his approach to be as much that of the artist as that of the scientist. His thinking was so free ranging and diversely motivated that one wonders whether to designate him a social scientist, a philosopher, an idealist, a humanist, or a humanitarian. He seems to have been all these and much more.

The present collection is something of a history of Redfield's career, one that covers all aspects of his work except those that we are promised in the second volume. The first paper, "Anthropology, a natural science?," was published in 1926 when Redfield, who had obtained a law degree and been admitted to the bar, turned to anthropology. Other papers date from the 1950's. Although substantive data vary somewhat during different periods of his life—for example, his early researches in Mexico and his later interest in other areas—all are concerned with the methodology for understanding people far more than with descriptive analysis.

These papers seem to me to embroider and expand the essential views set forth in Redfield's several books—*Tepotzlán, The Little Community, The Primitive World and its Transformation, A Village that Chose Progress,* and *The Folk Culture of Yucatán.* During the late 1920's and the 1930's, when other American anthropologists were recording ethnography and working out distributions and histories of culture elements, Redfield classified himself as a social anthropologist—in the British tradition—and attempted to conceptualize means of understanding "folk" or "peasant" societies. That his approach was always qualitative and did not employ quantitative methods, which are now becoming fairly common, was an inevitable manifestation of Redfield as a person. He worked with ideal models, such as the folk society and the folk-urban dichotomy, because his own feelings led him to identify himself with the "schemes of values of people [which are] central and of most importance" (p. 49). "Social scientists are closest to their subject matter when they are concerned with feelings, sentiments, opinions, standards, and ideals" (p. 48), and yet "social science . . . does not evaluate" (p. 52). The social scientist, he says, has partly the detachment of the physicist, partly the human sympathy of the novelist (p. 67). The stress on understanding values "implies a scheme of values on my own part" (p. 70). "Social scientists . . . do take moral positions as to matters they study" (p. 90).

These and similar statements found throughout the volume seem to me the key to Redfield's thinking. To feel strongly about what ought to be, while taking a thoroughly objective view of matters, poses a real dilemma. Redfield's use of ideal rather than real models reflects, in part, his humanitarianism and his compassion for people. He deeply sympathized with, perhaps even emphasized, the abstraction that he designated the little society, the folk society, or the peasantry, and he was distressed at the influence of urbanization upon it. When his critics pointed out that there were no actual societies with the particular characteristics that he ascribed the folk societies, Redfield was sufficiently imaginative to reply that, in this case, science develops as a dialectic—the original thesis, the critical antithesis, and the synthesis. Thus, his views on changing society kept apace of his critics.

The papers in this volume exemplify, however, Redfield's stubborn, life-long effort to understand human nature and to use every means, including those of his critics, to get inside the mind of man. But, while his compassion remained undiminished, the scope of his enquiry expanded. I think it important to stress that, during the last decade, his work on urbanization, part of it done in collaboration with Milton Singer, contained a very substantial core of "hard science" in its structural and functional analysis and its cross-cultural implications. This subject and its correlate, developing and changing civilizations, anticipated by many years much of the current interest in the broad problem of modernization to which social science is devoting itself. The chapter entitled "The cultural role of cities' (pp. 326–350) is especially relevant, although other chapters continue the strongly humanistic theme that runs throughout the volume.

JULIAN H. STEWARD
Department of Anthropology, University of Illinois

Russian Translation

Marine Microbiology (Deep Sea). A. E. Kriss. Translated from the Russian by J. M. Shewan and Z. Kabata. Interscience (Wiley), New York, 1963. xviii + 536 pp. Illus. $19.75.

This volume is an excellent English version of the original Russian text (1959), which was considered of sufficient merit in the U.S.S.R. to be awarded the Lenin prize in 1960. It is largely

an account of the ecological observations of Soviet microbiologists at hundreds of deep-sea stations in the Pacific, Atlantic, Arctic, Antarctic, and Indian oceans, with reports of more detailed work in the Black Sea, the Caspian Sea, the Sea of Okhotsk, the Greenland Sea, and the Norwegian Sea. To this English version, Kriss has added much new material on the distribution of heterotrophic bacteria in the open oceans and some rather fragmentary data on the use of microbiological indicators of deep-sea currents.

Approximately half of the text is devoted to the presentation and discussion of data on the numerical abundance, vertical distribution, varieties or kinds, and calculated biomass of bacteria in various marine environments—mostly water. The characteristics of marine microorganisms are illustrated by 64 microphotographs, 20 drawings, and 4 colored plates. The vertical distribution of bacteria is depicted by nearly 300 line graphs and about 50 histograms.

Twelve pages of text and 14 pages of microphotographs and colored drawings are devoted to the description and distribution of a new class of microorganisms, called Krassilnikoviae, discovered in the sea. Other workers, including Sorokin of the Academy of Sciences of the U.S.S.R., point out the similarity of these cluster-headed filamentous bodies to what Sorokin diagnoses as the colloblasts of ctenophores, but Kriss avers that microorganisms may have been mistaken by histologists for colloblasts.

Unfortunately, the 16-page chapter in which the author describes methods used in deep-sea microbiology is inadequate either for instructing the novice or for permitting the more experienced microbiologist to assess the significance of the results. Somewhat astounding is the author's contention that, "Experience has shown that it is not necessary to use special microbiological samplers (as suggested by various workers) for collecting water samples from the depths of the sea." Most aquatic microbiologists of my acquaintance question both the numbers and kinds of microorganisms found in water samples collected in unsterilized Nansen-type bottles, which Kriss calls bathometers.

The 42-page chapter, "Biochemical activities of marine microorganisms," deals mainly with the microbial transformation of chitin, nitrogen compounds, sulfate, and hydrogen sulfide in the Black Sea. At the end of this chapter is a short section entitled, "Bacteriophages in the depths of the sea," which deals largely with generalities on bacteriophages and observations made in the Black Sea.

There is an index of authors, one of geographical names, another that lists microorganisms, and a general subject index. The latter lists only 31 major topics—a commentary on the limited scope of the book. There are two bibliographies, one which gives 448 Russian titles and another with only 148 non-Russian titles. These numbers may be representative of the relative effort being devoted to marine microbiology in different countries, since more than half of the publications have appeared since 1950.

CLAUDE E. ZOBELL
Scripps Institution of Oceanography, University of California

Number Theory

Solved and Unsolved Problems in Number Theory. Daniel Shanks. Spartan, Washington, D.C., 1962. x + 230 pp. Illus.

Although, as the author remarks, the title may mislead one who has not read this book, even a superficial glance at the contents will show that the title is justified; the author's primary concern is not to develop a straight-forward theory but to place the present between the past and the future of the subject, to impart its flavor from open question through conjecture to proof, and to develop the tools necessary to this progress.

The first chapter is built around perfect numbers. The author remarks: "the reader may be inclined to think that we have no sincere interest in the perfect numbers, as such, but are merely using them as a vehicle to take us into the fundamentals of number theory. We grant a grain of truth to this allegation —but only a grain." In the first chapter, by following certain leads and coming back to perfect numbers from time to time, the author leads the reader through the quadratic reciprocity law without the idea of a congruence.

In the second chapter, "The underlying structure," congruences are developed and some attention is given to the structure of the multiplicative group of integers prime to m. The third chapter returns to something like the *modus operandi* of the first; it begins with the Pythagorean theorem and the sum of two squares and continues through the Gaussian integers to Fermat's last theorem (some proofs and some conjectures), with something of the use of continued fractions on the way.

There are many unfamiliar applications, and much attention is given to the importance of computation in number theory. The author's general method, especially in the first and third chapters, is to sketch the historical development, state and discuss a series of conjectures and theorems and the heuristic evidence behind them, pick out a key theorem to prove, and then show by diagram and otherwise how the structure fits together. The exercises are not relegated to the ends of the chapters but are given when the author has a question to ask the reader. They are an integral part of the development.

In the absence of a straightforward theory, it is often a little difficult to sift out unproved theorems from proved ones and to find the proof. This is not a book that one can dip into with great facility. It has somewhat the flavor of a guided stroll rather than that of a hike. One looks for signs of those who went before, explores traces of trails that look interesting, and returns to a favored spot for a second more careful look; he does not scorn rugged terrain, nor is he Puritanical enough to avoid the sheltered places. In the end, he is surprised to find how far he has gone and how much he has seen. Another journey is promised in a second volume.

The flavor of number theory and, in fact, of mathematics is in this book—this is its claim to distinction.

B. W. JONES
Department of Mathematics, University of Colorado

Aquatic Environments

Limnology in North America. David G. Frey, Ed. University of Wisconsin, Madison, 1963. xviii + 734 pp. Illus. $8.50.

The editor, David G. Frey, and the authors are to be congratulated on their contributions to *Limnology in North America*, a book which should fill a long-existent gap on the bookshelves of aquatic scientists.

Although limnology is a relatively young science, rapid advancements and the diverse approaches employed in