ron favors the ultimate derivation of the main part of the nonradiogenic and nonfissionogenic xenon from the solar wind. In addition, "we need a large fractionation of the krypton and xenon that have been outgassed from the earth, to the extent that xenon should be retained in the earth much more than krypton."

Venus is discussed in papers 5, 11, 12, and 14, with notable lack of agreement, particularly with respect to the presence and quantity of water in its atmosphere and on its surface. Carl Sagan stresses that "we do not now know the cause of the most obvious feature of Venus, its cloud layer." He considers a range of possibilities from hydrocarbon smog to transparent salts but leaves all issues in doubt, including the question of how the cytherean surface stays as hot as it does. Water vapor on Venus, opines Sagan, is probably less than 2×10^{-3} g/cm^2 (Spinrad and Richardson gave an upper limit of 3.5×10^{-3} g/cm^2). Holland agrees, finding no evidence of water. But A. Dollfus reports photometric absorption measurements that indicate about 1×10^{-2} g/cm^2, which would be comparable (from his measurements) to Earth if it were covered with clouds at an elevation of 13 kilometers. Thomas Gold, on theoretical grounds, argues that outgassing processes on Venus should be similar to those of Earth and that, because their masses are nearly the same and they both have cold traps in their outer atmospheres which restrict upward diffusion of water vapor, Earth and Venus should retain similar volumes of water above the lithosphere. In the case of Venus, with temperatures of 485° to 550°K in the colder parts, more of the water would be in the atmosphere and less in the hydrosphere.

Gold also offers some interesting speculations about the moon. On such a small planetary body, any gases that reached the surface would be "blown-away" by the solar wind, as well as being lost owing to insufficient gravitational attraction. However, at a surface temperature of 240°K (well below the freezing point of water) water produced by degassing would freeze at the surface, resulting in a thick layer of permafrost, underlain by liquid water at some depth. The consequences of such a situation are examined, but the evidence for lunar degassing is not discussed.

The Martian atmosphere is considered by R. M. Goody and A. Dollfus. Goody cites polarimetric measurements suggesting that the atmosphere of Mars is about one-fourth to one-fifth that of Earth and validating, within a factor of 2, Dollfus' estimate of 85 millibars for surface pressure. Atmospheric motion is revealed by the drift of clouds, possibly of water vapor, which Dollfus estimates as 1.5×10^{-2} g/cm^2. Goody points out, however, that difficulties exist even with the well-known polar caps of Mars—the mist that during winter months covers these caps having an albedo of only about 0.3. If this is an ice mist, as Dollfus believes, it is a very peculiar one, for we do not get an obscuring ice mist on earth with an albedo much below 0.8.

The possibility of an atmosphere on Mercury is reexamined by G. Field, who reasons that the escape velocities involved on a mass like that of Mercury (given as 0.054 Earth units) require that, *if* an atmosphere exists, it should consist of heavy gases such as argon. The recent spectrographic studies of A. N. Kozyrev suggesting a mercurial atmosphere of hydrogen presumably appeared too late for inclusion here.

Finally, the giant outer planets are found to resemble the sun more than they do the inner planets. P. J. E. Peebles advances reasons to consider that "both Jupiter and Saturn have hot interiors with very deep atmospheres" and no fixed surface below the cloud layer. The upper layers probably contain "a reasonable amount" of helium, and Jupiter is roughly 81 percent hydrogen (by mass). Nevertheless, these planets are considered to have relatively high-density cores. The high internal temperatures inferred are attributed to heat flux from radioactive decay. A very brief note by R. Wildt calls attention to the work of Spinrad and Trafton, utilizing old absorption spectra to show atmospheric motion and deduce a composition for the Jovian atmosphere of hydrogen, helium, a little neon, and somewhat less ammonia and methane.

In a nutshell, this book represents a strong endorsement of the outgassing process as a primary mechanism in the origin and evolution of atmospheres and oceans, coupled with a plea for more and better data from planets other than Earth, data gathered by the use of space probes and remote sensing devices.

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Ethnography

Culture and Community. Conrad M. Arensberg and Solon T. Kimball. Harcourt, Brace, and World, New York, 1965. xvii + 349 pp. $3.95.

Culture and Community describes and discusses human communities as syndromes whose systematic examination can "yield major insights into the connections among culture, society and personality that were long asserted to exist but were hitherto only partially specified." It is both a reference work and a manual for fieldworkers. As both it is outstandingly successful.

Although this book is largely a collection of articles published separately over a period of years, it is tied together so skillfully with new connective and interpretative material that it flows smoothly throughout. There are four main parts: a brief historical review, definitions, and a procedural outline for fieldworkers; a typology of American subcultures; a historical review of comparative ethnography of community life in America; and a final consideration of methodological theory and practice. The authors trace in great detail the development of concepts of communities as microcosms of the overall cultural frameworks within which they are set. Each different approach is described, examined carefully, and tested in the light of experience of the authors and other investigators. Out of this study there is developed a master method, modestly presented not as the ultimate best but as apparently the most fruitful that has been worked out so far. Thus, the authors have responded to the basic "oddity of the history of community study that one hunts almost in vain for a good account of the implicitly agreed-upon field techniques. They never seem to have been described thoroughly. . . ." Now they have been.

The authors go on to apply their method to various types of communities and aspects of community life in the United States. Here again their exposition covers a wide range in space and also depth in time, so that we feel the full force of the continuity and dynamics of cultural change. Old World origins and comparative material as well are also taken into full account. Nothing that can throw light on each type of community in question has been left aside.

Arensberg and Kimball have pre-

sented an immense mass of data, dissected and examined in painstakingly minute detail. It seems impossible that such a book could make pleasant reading, and yet it does. It is not easy to read; nearly every sentence requires and inspires careful thought. But it is beautifully organized and well written in plain English. It is a book that no one working in any of the social sciences can afford to be without.

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Physics

Theory of Crystal Dislocations. A. H. Cottrell. Gordon and Breach, New York, 1964. x + 91 pp. Illus. Paper, $2.50; cloth, $4.50.

This brief monograph is intended to outline the basic theory of dislocations. It is excellent in that basic ideas concerned with dislocations are very clearly described. The book is not intended to be, nor is it, a textbook on the subject. It is a pity that Cottrell did not include a few beautiful photographs of dislocations in crystals and some indication of his estimate about the future of the field. Both would have added to the value of the book.

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Psychology

New Directions in the Study of Language. Eric H. Lenneberg, Ed. M.I.T. Press, Cambridge, Mass., 1964. x + 194 pp. Illus. $5.

This book provides an excellent introduction to certain points of view toward and to some of the methods for investigating language. It consists of four papers (by Leonard Carmichael, Edmund Leach, Eric Lenneberg, who substituted for A. R. Luria, and George A. Miller) and a discussion by Frieda Goldman-Eisler which were presented in a symposium, organized by Lenneberg, held during the Seventeenth International Congress of Psychology in Washington, D.C., in 1963, and two other papers (by Roger Brown and Ursula Bellugi and by Susan Ervin) which were presented at other sessions of the congress.

Carmichael links human speech with the vocal skills and vocal functions of lower animals, thus pointing to the continuity of evolution of language, and brings out the important point that the structures involved in human speech undergo a good deal of postnatal maturation. In stressing biological aspects of human language, Carmichael is joined by Lenneberg, who argues that there may be specific biological propensities in the human species which are responsible for the appearance of the unique features of human language. Lenneberg also offers some evidence that can be interpreted as supporting genetic transmission of capacities for language. He disputes, with evidence, the notions that the appearance of human language is due to man's general intelligence or the weight of his brain, preferring the idea that species-specific biological capacities are responsible, although their character is as yet unknown. By bringing out biological aspects of human speech, Carmichael and Lenneberg emphasize viewpoints and evidence not widely considered in discussion of human language.

Miller reiterates his interest in the psychological character and effects of syntactic and semantic rules, describing some relevant research, and expresses his concern that if these rules are to be conceived as habits the habits must be of a kind that permit the language user to deal with new linguistic events—that is, to reflect the pervasive productive character of language. He reports work directed to the understanding of the process involved in negation.

The papers by Brown and Bellugi, by Ervin, and by Goldman-Eisler are data-oriented. The first two report empirical attempts to gain further understanding of the conditions and processes involved in the acquisition of language by the child. They are interesting and thought provoking. Goldman-Eisler summarizes much of her own research, designed to use the phenomenon of hesitations in the course of speech as a means of isolating the units of which speech is formed.

Leach's paper is concerned with animal names and categories involved in taboo, verbal abuse, and the like. His point appears to be that the social distance of the familiar animals from the human self provides, among other things, a basis for the distribution of these animal names into those which are affected by taboo and used in verbal abuse and those which are not.

While this collection of papers does not serve as a general introduction to all the extant and widely employed ways of thinking about and studying language, it does provide a rich, thoughtful, and interesting variety. It can be recommended.

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Allendoerfer Advanced Series

Projective and Related Geometries. Harry Levy. Macmillan, New York, 1964. x + 405 pp. Illus. $11.

During the present century research in geometry has been characterized by an ever increasing use of nongeometric tools. As a result, geometry courses required more and more outside knowledge, and finally they either disappeared altogether from the undergraduate curriculum, or became disguised courses in some other field. An important example is the linear algebra course which is presented as projective geometry. Recently, this historical trend has given rise to a counterbalancing interest in developing a 1-year geometry course for undergraduate mathematics students, a course that would somehow convey the flavor of geometry as a study in itself. An important feature of this book is that it is in fact a geometry book, although it relies more heavily than I like on linear algebra. The first chapter sets the tone, for the concept of transformation is introduced on page 1 and is immediately followed by transformation group and invariance. The inevitable digression on linear algebra is then presented. In this digression Levy fails to make use of the fact that the notion of transformation group is already available, and relies instead on the cumbersome and antiquated theory of n-dimensional determinants. The chapter ends with two examples—(i) the group of motions of the Euclidean plane, defined by equations and not by the property of being isometric, and (ii) projections in Euclidean space, for which the equations are immediately developed.

Later chapters deal with projective