of artisans, priests, and bureaucrats would go far toward defining the composition and structure of societies. Differences between cities which are dispersed around ceremonial centers and those which are concentrated within walls certainly also have implications for social structure. Differences between traditional village laws and nationally codified laws and between the role of money, markets, and commerce are also matters discussed at the Oriental Institute symposium, but not viewed in cross-cultural perspective. All of these matters, however, constitute important variables within the great category of "preindustrial city," and they will require division of this category into several major subcategories.

The problem of urbanology, then, may have a middle ground concerning the meaning of cross-cultural similarities. There are more types of society than Sjoberg's folk, feudal, and industrial, but each type is not necessarily unique. The many varieties of Near Eastern cultures discussed in *City Invincible* and *The City in History* exemplify the operation of different processes and their culminations in unlike types in major developmental periods. Mesopotamia seems to have developed farm villages, towns, city-states, and then states, whereas Egypt amalgamated its farm villages very rapidly into large political units without clear intervening stages. Comparison of these with the types of sociopolitical structures that developed in India, the Far East, and native America would lay an empirical basis for a more solid taxonomy of societies and cultures.

The methodological point is that one may start with a high order of generalization, as in Sjoberg's study, or with stress upon distinguishing particulars, as in much of *City Invincible*, or with intermediate levels of generalization. The main obstacle to broadening the humanists' approach is that they so often see cultural achievements as unique expressions of man's creativity which are not subject to causal formulation that they are reluctant to proceed from the particular to the general.

Owing to the humanists' lack of interest in a comparative method and the sociologists' general indifference to history, some very fundamental problems are not squarely faced. Cities are described as the loci of state rulers, priests, bureaucrats, artisans, merchants, and other special groups which appeared only after agriculture afforded a surplus. But no one has postulated why the farm population was willing to surrender its surplus to the city-dwelling rulers. It appears that theocratic rather than military controls were the first source of state power in many instances, but we are offered no explanation of why this was so. The eventual rise of military power also lacks causal hypotheses. Mumford alone comes to grips with these problems. He speculates that the practice of human sacrifice in primitive fertility rites eventually led to wars of conquest, and he imagines that "the urban institution of war was . . . rooted to the magic of a more primitive society [the Paleolithic hunter], which he describes as "a childish nightmare . . ." which, in modern society, survives as a belief "in the collective unconscious . . . that only by wholesale human sacrifice [modern warfare] can the community be saved" (pages 42–45, *passim*). One wishes that Mumford knew a little more anthropology and psychology, but science is far better advanced by giving the wrong answer to a problem than by failing to recognize that the problem exists.

The methods of urbanology can be broadened to have a place for the many studies of contemporary urbanization that are being carried out around the world. One need not decide whether Mecca, Nairobi, Fez, Cuzco, or Hongkong are industrial or preindustrial. Modernizing processes—such as education, technological development, communications, transportation, and others—are not only affecting different segments of the urban and suburban populations in distinctive ways but they are penetrating the hinterland, transforming the native, rural societies.

Synthesis of Views

Macroscopically viewed, urbanization reflects key transitional points, which are implicit in all three volumes: transformation of the food hunter and collector into settled farmers; amalgamation of farm villages into states, whose civilized institutions are concentrated or "contained" in the dominant city or cities; industrialization, which creates new roles and statuses and affords greater individual mobility. Microscopically viewed, there are multilinear lines of evolution and significantly different sociocultural and political types within these larger categories and developmental periods.

While the three volumes do not reduce their objectives to such simple terms as discussed in this review, they cross interdisciplinary boundaries to an extraordinary extent. This is especially true of *City Invincible*, which is the least integrated but the most interesting because of the exchange of opinions between so many kinds of scholars. There is no doubt that, as individual scholars know more about one another's disciplines, or can draw upon their colleagues' knowledge, differences in purpose, method, and interpretation will narrow.

9 Planets, 31 Satellites

The Solar System. vol. 3, *Planets and Satellites*. Gerard P. Kuiper and Barbara M. Middlehurst, Eds. University of Chicago Press, Chicago, Ill., 1961. xx + 601 pp. Illus. $12.50.

Until the latter part of the 19th century the science of astronomy was almost entirely concerned with the planets, and truly great discoveries were made in efforts to interpret planetary motions. Copernicus, Kepler, Galileo, and Newton, to name but a few of the early greats, helped to create the concept of modern natural science while studying the planets. The introduction, within the last century, of photography and spectroscopy with large reflectors turned the attention of astronomers to the stars, the Galaxy, and the entire observable universe; these explorations were so exciting that there was an almost complete abandonment of planetary studies. Nevertheless, the new instruments, techniques, and ideas developed in stellar studies could be and were usefully applied in planetary studies and broadened such research far beyond the purely dynamical approach.

The pendulum is beginning to swing the other way as extensive and expensive space probes are being made in increasing numbers, size, and range. The next 10 years should witness the exciting exploration of the surfaces of the Moon, Mars, and Venus. Such rocket research, several orders of magnitude more expensive than conventional astronomical observations, must be

planned with extreme care; such planning will depend heavily—for the immediate future—on ground-based observations. The publication of this book at this time is therefore especially timely.

Planets and Satellites is the third in a series of five volumes on the solar system. It has been 7 years since the publication of volume 2, *The Earth as a Planet*, and it is to be hoped that publication of volumes 4 and 5, which will deal with the Moon, meteorites, comets, and the interplanetary medium, as well as with additional material on planets, will not be so long delayed in publication.

The 18 chapters were written by 19 active specialists who had access to important unpublished literature and who were in a position to evaluate the widely scattered literature in critical fashion. Chapter 1 deals with the Earth as seen from space by TIROS. Chapter 2 gives a very readable account of the Lowell Observatory's transneptunian planet search. The next three chapters discuss orbits and masses, the stability of the solar system, and planetary interiors; this last subject should soon receive a real boost, as standard geophysical techniques are applied on the surface of the Moon and the nearby planets. Chapters 6 through 9 are concerned with the photometry and polarimetry of the Moon, planets, and satellites, while the next two chapters are devoted to planetary temperatures and recent radiometric studies. The surprising new radio observations of the Moon and planets are treated in chapters 12 through 14, while chapter 15 is an excellent account of the Pic du Midi planetary studies. This is followed by photographs of the planets taken with the 200-inch telescope and Finsen's color photographs of Mars. The last chapter is by Kuiper, who discusses limits of completeness of searches for intramercurial planets and for new satellites.

So much important previously unpublished material is in this book that the subject matter bears but slight resemblance to any other textbook or monograph. I can heartily recommend this volume both as a reference book for the specialist and as a source of information for scientists working in allied fields of study.

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Research Leads

Values and Ideals of American Youth. Eli Ginzberg, Ed. Columbia University Press, New York, 1961. xii + 338 pp. $6.

This volume preserves 22 selected papers of the 1961 Golden Anniversary White House Conference on Children and Youth. The contributors represent 18 professional specialties. Examples include pediatrics, child psychology, university administration, and theology. The contributions are conformably diverse. They are not, in most instances, expressly about the values and ideals of American youth. Indeed, they are about so many things of severally unique import that a topical breakdown seems obligatory here.

Eight essays are captioned *Development and Adaptability*. René J. Dubos and Charles A. Janeway take turns in widely ranging pursuit of biologic factors in adaptation to technological change. Irene M. Josselyn and Margaret Mead view older youth in the toils of social change, from vantage points respectively of psychoanalysis and cultural anthropology. Winston Ehrmann interprets data on sexual practices and codes of adolescents. Urie Bronfenbrenner reviews evidence that the American child has changed in response to change over recent decades in patterns of child rearing. Richard G. Axt analyzes the hard task of adapting higher education to its rising student tide. Earl A. Loomis considers the newer place of religion in the life of the child.

Six papers are headed *Problem Areas*. Lester B. Granger probes into ways to effect "community organization for social change." Norman V. Lourie surveys theory of and practice to prevent juvenile delinquency. Ross A. McFarland and Roland C. Moore track the automobile as one vexing root of trouble for youth, and Herbert B. Warburton scrutinizes pornographic literature as another. Hilda Taba and Frederick D. Patterson separately attack recent issues of intergroup relations as these involve young people.

Concluding addresses are headed *Values in Transition*. Liston Pope assesses signs of a revisionary outlook by youth upon traditional American values. Kenneth B. Clark evaluates conceptions and methods of discipline in child rearing, with interest first in creative outcomes. Henry Enoch Kagan assays institutional obligations and opportunities in the teaching of values. Talcott Parsons applies to diagnosis of morality in the young his instrumentalistic version of the American value system. Joseph Sittler inquires into the "interior dynamics" of maturing ideals and values. T. V. Smith appeals on behalf of youth for an imaginatively pluralistic morality. Lawrence J. McGinley argues for "transcendent values" to insure individual fulfillment against organizational complexity. Abram L. Sacher details a need to create a "climate of commitment" for "our cool and uncommitted young."

The papers together suggest (i) that children and youth now have and pose enormous problems, (ii) that knowledgeable and articulate persons of many callings are actively interested in these problems, (iii) that their wisdom in the matter stands to help, but (iv) that we now have to rely too much upon such wisdom, for lack of research to test, integrate, and extend it. Yet here are leads, some telling research, and some inspiration for research to the purpose.

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Writing and Decipherment

Voices in Stone. The decipherment of ancient scripts and writings. Ernst Doblhofer. Translated by Mervyn Savill. Viking, New York, 1961. xi + 327 pp. Illus. $6.

This book is definitely not for the readers of *Science*. To be sure, it does cover in a superficial sort of way the history of the decipherment of practically all the ancient scripts: Egyptian, Old Persian, Babylonian, Hittite, Ugaritic, Gublitic, Cypriote and Creto-Mycenean. But instead of presenting a straightforward account of the relevant methods and procedures and letting these speak for themselves, as it were, it interlards the more informative sections with inane, insipid, and adolescent observations on the character and endowments of the decipherers, and does so in exaggerated and "dramatic" phraseology which would bring a blush to the cheek of many of them. Add to this a translation which is often inexact, clumsy, and at times