

suspended between the old and new statuses; and rites of incorporation, symbolizing the achievement of the new status. A Brahman youth's ritual bath before initiation as a novice is an example of a rite of separation, a girl's seclusion during her first menses of a rite of transition, and sexual hospitality to a visiting stranger of a rite of incorporation.

In support of his thesis, van Gennep quotes a great variety of material, much of it unreliable, from peoples all over the world. But despite his uncertain scholarship, his generally "botanizing" approach to the categorization of religious practices, and his total failure to deal with the social and cultural contexts from which his examples are drawn, van Gennep offers, in his concept of an underlying pattern of withdrawal, isolation, and return which is common to all passage rituals, a valuable theoretical insight into the dynamics of religion in both psychological and sociological terms.

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**Heavenly Clockwork.** The great astronomical clocks of medieval China. Joseph Needham, Wang Ling, and Derek J. de Solla Price. Cambridge University Press, New York, 1960. xv + 254 pp. Illus. \$12.50.

This is a history, but not a mere chronological account, of the clock in China, from the time of the later Han dynasty (about A.D. 120) through the beginning of the Ming dynasty (about A.D. 1600). The volume, organized in a way which is unusually revealing of the processes by which the authors' research was accomplished, occasionally gives the reader a feeling almost of participating in the research. Beginning with the elaborate astronomical clock of Su Sung (1086-94), which has been mentioned but not fully analyzed in earlier literature, the authors have searched the dynastic histories and encyclopedias, with which Chinese literature abounds, in an endeavor to determine, first, the earliest evidence of such a device in Chinese history and, second, the reasons for the regression in Chinese horology which made it possible for the Chinese to be so impressed with the clocks brought in by the Jesuits in the 16th century. Their search for an an-

swer to the first question leads to Chang Hêng (fl. 120-140), a well-known mathematician and astronomer who is already recognized as an inventor (probably the first) of an instrument for indicating earthquakes. It would appear that the Chinese version of that critical element of the clock, the escapement, was a device demonstrably related to the water clock and, hence, plausibly descended from that older device.

The quest for an answer to the second question is necessitated by the evident impression on the part of both the Jesuits and "the majority of Chinese" that the clock was a new thing in China at the end of the 16th century. The authors conclude, provisionally, that clock-making had not actually ceased, but had been reduced to "a minor industry" 250 years prior to the arrival of the Jesuits, a victim of the attempt of the Ming to efface certain luxuries of the previous dynasty, among them the clocks (page 141). As is acknowledged, this conclusion leaves for further research the actual condition of the "minor industry" when the Jesuits came.

Perhaps the most challenging aspect of this book is its suggestivity concerning the rationale of horology. It appears that Chinese clocks, until late in the 13th century, were principally concerned with the representation of astronomical motions and not with the visual indication of time. The authors suggest a connection between the invention of the "powered celestial globe as a calendrical computer" and the determination of the imperial succession by state astrology (pages 172-73). They conclude with a brief attempt to relate the story they have unfolded to horology in India and the West.

I have mentioned only a few of many intriguing points raised in this remarkable book, which I presume to be a by-product of the first two authors' *History of Science and Civilization in China*. Much of the citation in the present work is to the unpublished volume 4 of that *History*. But it is nonetheless an impressively self-contained piece of scholarship, admirably illustrated and written in a sprightly style that overcomes the drag of an inevitably cumbersome, critical apparatus. Scholarship and elegance of presentation are not often more successfully combined.

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**The Nation's Children.** vol. 1, *The Family and Social Change*. 252 pp. vol. 2, *Development and Education*. 242 pp. vol. 3, *Problems and Prospects*. 242 pp. Eli Ginzberg, Ed. Columbia University Press, New York, 1960. Paper, 3 vols. for \$6.50; cloth, \$4.50 each.

In discussing plans for the 1960 golden anniversary White House Conference for Children and Youth, the Conference Steering Committee faced the need for materials to be presented to the delegates to serve as a basis for the discussion that would be "charting directions for the next decade." The feasibility of stimulating research in the multiple areas affecting children and youth in time for use by the conference was rejected; instead, it was decided that the Committee on Studies should invite distinguished experts in a variety of fields to write essays on subjects of current concern about youth today. The essays were to be written for the educated layman, "to strive for balance and eschew extremes."

The collected articles have been published in three volumes, edited by Eli Ginzberg, chairman of the Committee on Studies of the White House Conference. The result is a most interesting panorama of the nation's problems and tasks in regard to our young people.

The first volume deals with some of the social changes affecting family life, such as the new suburbia, urbanization, prosperity, health gains, population increase, changing family role definitions, cultural shifts, increased leisure, and developments in the religious field. The contributors show how these changes influence the family and affect the way youth today see their world. For instance, financial security is shown as creating a sense that one's personal future is safe; this leads to the feeling that one does not have to delay marriage to pursue a career. This picture is also affected by the reduced health hazards in childhood illnesses. With these new forces at work, marital and parental roles and functions are changing. The interplay of these factors is graphically described by the specialists who contributed to this volume.

*Development and Education*, the second volume, focuses on "the analysis of the gap between our aspirations and our accomplishments in preparing young people for life from three vantage points: how the gap came to be, what can be done to narrow it, and the

extent to which it will probably persist." The problem of the overwhelming tasks given to the American school by the public which seems to be affecting the primary tasks of education, the question of "wasted talent," and the interplay between education and employment are a few of the knotty questions posed and tackled in this volume.

The third volume, *Problems and Prospects*, present some specific groups, such as minority group youth, delinquent youth, and rural youth, which require special help. Evaluation of the effectiveness of help now offered by governmental and other agencies to these youths, as well as to working mothers, low-income families, and children of broken homes, is attempted in this volume.

These volumes offer a wealth of information, much provocative thought, and above all the tasks to be tackled if we are to perpetuate our democratic heritage which will shortly be in the hands of our children. The privilege of obtaining these books is extended to the general public. The paperback volumes can be purchased by writing to the White House Conference for Children and Youth Headquarters, Washington 25, D.C.; the clothbound volumes are available from Columbia University Press, New York.

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New York, New York*

**Chimica Generale e Inorganica.** Giuseppe Bruni. Giorgio Renato Levi and Mario A. Rollier, Eds. Libreria Editrice Politecnica, Milan, Italy, ed. 11, 1960. xxi + 822 pp. Illus.

This famous textbook of general and inorganic chemistry by the late Giuseppe Bruni, which was published in 1921 and which soon became a standard text for Italian universities, now appears in its 11th edition, revised and brought up to date by two of Bruni's most eminent pupils. The first part deals with what we call physical chemistry, the second with systematic inorganic chemistry. The largest chapter is devoted to nuclear chemistry, and the advanced concepts of atomic theory are presented in a form that is remarkable for its simplicity and intelligibility.

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## New Books

### Biological and Medical Sciences

Morgan, Jeanne. *The Morphology and Anatomy of American Species of the Genus Psaronius*. Univ. of Illinois Press, Urbana, 1959. 115 pp. Paper, \$3; cloth \$4.

Umbreit, W. W. *Metabolic Maps*. vol. 2. Burgess, Minneapolis, 1960. 287 pp. \$5.50.

Wright, Helen, and Samuel Rapport, Eds. *Great Adventures in Nursing*. Harper, New York, 1960. 298 pp. \$3.50 (juvenile).

### Economics and the Social Sciences

Bauer, Raymond A., Alex Inkeles, Clyde Kluckhohn. *How the Soviet System Works*. Vintage Books, New York, 1960. This study by the Russian Research Center, Harvard University, was originally published in 1956. The book presents an investigation of daily life in the Soviet Union; it is an analysis of such aspects of society as the family, business, education, science, and the church under the Soviet system.

Bell, Daniel. *The End of Ideology*. Free Press, Glencoe, Ill., 1960. 416 pp. \$7.50. These essays deal with social change in America during the 1950's. Bell, former labor editor of *Fortune*, is an associate professor of sociology at Columbia University.

Feifel, Herman, Ed. *The Meaning of Death*. McGraw-Hill, New York, 1960. 369 pp. \$6.50. The 21 contributors represent the fields of medicine, psychiatry, psychology, physiology, psychoanalysis, philosophy, anthropology, religion, art, and literature.

Gearing, Fred, Robert McC. Netting, Lisa R. Peattie, Eds. *Documentary History of the Fox Project, 1948-1959*. Dept. of Anthropology, Univ. of Chicago, Chicago, 1960. 431 pp. \$8.50. Written as a supplement to *A Documentary History of the Fox Project* (1955), this volume includes recent documents and more complete information on the project.

Granick, David. *The Red Executive*. A study of the organization man in Russian industry. Doubleday, Garden City, N.Y., 1960. 334 pp. \$4.50.

Hatch, John. *Africa Today—and Tomorrow*. An outline of basic facts and major problems. Praeger, New York, 1960. 289 pp. Paper, \$1.75; cloth, \$4.

### Miscellaneous Publications

(Inquiries concerning these publications should be addressed not to Science, but to the publisher or agency sponsoring the publication.)

*Equipelement électronique pour l'industrie nucléaire Française*. P. Desneiges, M. Doireau, L. Koch, T. Weill. International Atomic Energy Agency, Vienna, 1960 (order from National Agency for International Publications, New York 22). 59 pp. \$1. A review of nuclear electronics which briefly describes or enumerates electronic instruments used in the physical, medical, biological, and other aspects of the nuclear energy industry, pertaining to

the reactor and its utilization, processing of fuel, ore refining and prospecting. The authors work with the Centre d'Etude Nucléaire at Saclay, France.

*Geological Survey Bulletin*. No. 1071-D, "Geology of the Huerfano Park area, Huerfano and Custer counties, Colorado," Ross B. Johnson, 36 pp., maps, 1959, \$1.25; No. 1072-L, "Distribution of silica resources in eastern United States," T. D. Murphy, 12 pp., maps, 1960; No. 1072-M, "Geology and fuel resources of the Mesa Verde area, Montezuma and La Plata counties, Colorado," Alexander A. Wanek, 58 pp., maps, 1959; No. 1087-D, "Geology and uranium deposits of Monument Valley, San Juan County, Utah," Richard Q. Lewis and Donald E. Trimble, 29 pp., maps, 1959, \$1; No. 1095, "Bibliography of North American geology, 1957," Ruth R. King *et al.*, 535 pp., 1960, \$1.75; No. 1105, "Selected annotated bibliography of gypsum and anhydrite in the United States and Puerto Rico" (contains over 400 annotated references on the geology, geographic occurrences, origins, technology, and uses of gypsum and anhydrite), Charles F. Withington and Marion C. Jaster, 130 pp., 1960, \$0.50; No. 1106-D, "Geophysical abstracts 179, October-December 1959," Dorothy B. Vitaliano, *et al.*, 125 pp., 1960, \$0.40; No. 1109, "Geologic appraisal of dimension-stone deposits," L. W. Currier, 82 pp., map, 1960; No. 1112-A, "Selenium in some epithermal deposits of antimony, mercury, and silver and gold," D. F. Davidson, 20 pp., 1960, \$0.15. *Geological Survey Professional Paper*. No. 272-C, "Review of literature on evaporation suppression," George B. Magin, Jr., and Lois E. Randall, 19 pp., 1960, \$0.20; No. 354-C, "Giant waves in Lituya Bay, Alaska," Don J. Miller, 39 pp., 1960. U.S. Geological Survey, Washington, D.C. (order from Supt. of Documents, GPO, Washington 25).

*Scientific Studies at Fletcher's Ice Island, T-3, 1952-1955*. Geophysical Research Paper No. 63, vol. 2, Vivian Bushnell, Ed. Geophysics Research Directorate, Air Research and Development Command, Bedford, Mass., 1959. 122 pp. Results of field investigations are presented, including a summary of surface meteorological observations, a study of upper air temperatures, and an analysis of solar radiation data.

*University of California Publications. Botany*, vol. 32, No. 1, "Taxonomic studies in the Phacelia Magellanica polyploid complex with special reference to California members," Lawrence R. Heckard, 126 pp. *Entomology*, vol. 17, No. 1, pt. 4, "A revisional study of the bees of the genus Perdita F. Smith, with special reference to the fauna of the Pacific Coast. (Hymenoptera, Apoidea)," P. H. Timberlake, 156 pp. *Geology*, vol. 36, No. 4, "Paleontology and correlation of the Ohlson Ranch formation," Joseph H. Peck, Jr., 10 pp. Univ. of California Press, Berkeley, 1960.

Water Resources Development Centre. *First Biennial Report*. United Nations, New York, 1960. 38 pp. Covers the establishment of the center and its functions and contains a summary of current activities.