

for upward readjustment of both the lower and the upper boundaries of the Wolfcampian.

On the evidence of these detailed studies, the author offers correlations between the American standard for the Wolfcampian and sequences of Lower Permian strata elsewhere. In future writings he may wish to resolve a discrepancy between his Fig. 11 and the accompanying text, and thus to clarify his position with respect to correlation between the American and Russian standard sections.

CLAUDE C. ALBRITTON, JR.  
*Department of Geology and Geophysics,  
Southern Methodist University*

## Political Science

**The Political Role of Labor in Developing Countries.** Bruce H. Millen. Brookings Institution, Washington, D.C., 1963. xii + 148 pp. \$3.50.

In considerable sections of the contemporary world, historical sequences in the development of labor unions appear to be reversed. Unions in the now-industrialized countries were organized and expanded, with some delay, consequent on the spread of industrial modes of production. In many of the newly developing areas, labor unions are stronger than the meager industrialization would lead one to expect, and in some instances their membership is larger than the entire industrial labor force.

The explanation of this anomaly (or anachronism), Millen argues, is to be found essentially in the political role played by unions in the formation of new nations. The author's concern for the new nations, particularly of Africa and Asia, means that his title is somewhat misleading. Latin America, for example, gets virtually no attention, though Mexico and perhaps several other countries would have fortified his case for the importance of unions in mobilizing populations for social change.

The author correctly notes that, in the developing areas, it is chiefly the "precocious" character of unions, not their political involvement, that distinguishes them from historic precedents. The primarily "private," economic focus of union activity is virtually unique to the United States. In comparative perspective, the American experience may be viewed as an historical accident, since neither nation-building nor the establish-

ment of an essentially democratic polity were problematical by the time industrialization became extensive. In Europe the radicalism of labor movements has been a function of the intransigence of a governing elite, with "evolutionary" programs of social reform appearing in countries where aristocracies have compromised with new political forces. In the developing countries to which Millen attends, the course of radicalism has also been the course of nationalism (often under a "socialist" banner for planned rapid growth). It remains to be seen how tolerant new states will be of continued labor protest, once independence, possibly accompanied by extensive nationalization of production, has been achieved. Extensive pluralism, permitting the formation of partially divisive interest groups and parties, does not appear to be an immediate prospect in most of the new states.

The author's aim appears to have been somewhat more didactic than analytical; he seems especially concerned to instruct American labor attachés and the like that they should not expect American-style unionism in exotic countries. From a social-scientific point of view, the presentation would have benefited from the type of comparative generalization about stages in labor protest that was formulated by Clark Kerr and his associates in *Industrialism and Industrial Man* (Harvard University Press, 1960). This book is listed in Millen's bibliography, but there is no reference to it in the text. As it stands, Millen's book will be of value as a source for the "political sociology of development," a subject of growing interest but challenging in its complexity.

WILBERT E. MOORE  
*Department of Sociology and  
Anthropology, Princeton University*

## Cell Biology

**Symposia of the International Society for Cell Biology.** vols. 1 and 2. vol. 1, *The Interpretation of Ultrastructure* (1962, 448 pp. \$14); vol. 2, *Cell Growth and Cell Division* (1963, 352 pp. \$13). R. J. C. Harris, Ed. Academic Press, New York. Illus.

These volumes are the first two in a new series of annual symposia sponsored by the International Society for Cell Biology. The stated purpose of this series is to "deal with subjects in which new information has become available

but in which definite new viewpoints have not been established. . . . [and] to assist . . . in the development and re-assessment of knowledge in these fields by the broad exchange of data." It is generally agreed that symposia on a specific subject, with the participants limited to a small number who are actively engaged in the field, are the most fruitful meetings. In order to make these available to a larger audience, an increasing number are appearing in print. Not all symposia, however, are suitable for publication, especially if the purpose was mainly to stimulate a free flow of ideas and contact between investigators of different backgrounds. In published symposia, there is too much repetition with respect to authors and to material presented.

The first volume in this new series is devoted to a topic of interest to many biologists, biochemists, and biophysicists: what does the electron microscope tell us about the structure of viruses and cells, and how much of this can we believe or take seriously. The topic is clearly defined and of current interest; the collection of articles gives a good idea of the present state of the art, its successes, and the pitfalls. The volume deals with problems of fixation; the correlation of electron microscopy with other techniques such as x-ray diffraction; methods for localization of enzymes, nucleic acids, and proteins with the electron microscope; quantitative electron microscopy; autoradiography; the application of the negative staining technique; and the organization of the cell nucleus and cytoplasmic membrane systems. Even though more than a year elapsed between the symposium and its publication, and the field has advanced rapidly in the meantime, this volume will be very useful to anyone interested in the applications of electron microscopy in biology.

The second volume deals with a less well-defined area and is, thus, less unified. Some articles are simple reviews of published material, without much relevance to the other topics; others are progress reports on material that will be published in detail shortly. While such progress reports and speculations are the very meat of a symposium, they are not well suited for publication. It is interesting that the concepts and ideas which give vague direction to the studies reported here, of growth and its control in a variety of organisms, were borrowed from modern

microbial genetics. However, the situation in plant and animal cells is obviously more complex, and the absence of a theoretical framework and the diffuseness of ideas concerned with the control of cell growth and cell division is felt throughout the volume. Perhaps this is characteristic of a field that is in the process of reorientation. Even so, many interesting experiments are reported here, and the volume illustrates the problems and approaches, both biochemical and cytochemical, in the present investigation of cell growth and cell reproduction.

HANS RIS

*Department of Zoology,  
University of Wisconsin*

## Ethnography

**The Sonjo of Tanganyika.** An anthropological study of an irrigation-based society. Robert F. Gray. Published for the International African Institute by Oxford University Press, New York, 1963. xiv + 181 pp. Illus. \$6.

This book describes an unusual society in East Africa—the Sonjo, an isolated Bantu-speaking group, whose economy revolves around irrigated agriculture and goat-herding. The Sonjo are surrounded by the Masai, cattle pastoralists who differ profoundly from the Sonjo in both language and culture. This is the first ethnographic study of the Sonjo, and, in these terms alone, it is an important contribution to our knowledge of East Africa. But the study does not stop at description; it is also concerned with larger theory, specifically with that of “hydraulic” (that is, irrigation-based) societies. This theory, which is most vigorously expounded by Karl Wittfogel, attempts to relate a specific sequence of social developments to irrigation. Since Wittfogel used China as the prime test case, the problem of controlling the unique historical factors remained. Also, the periods most crucial for the theory are the early ones, the periods that lend themselves most readily to different interpretations. The Sonjo, being a small-scale irrigation society, afford the possibility of glimpsing relationships that historic China may be presumed to have transcended and obscured.

The ethnographic data show a complicated economic network of differential rights to water and the integration of this network with the political organ-

ization at the expense of what appears to be an atrophied version of the lineage system that is characteristic of East Africa. Gray examines the extent to which the “centralized” village government grew out of the necessities of ecology and the irrigation system; as far as possible, history, data on related groups, and outside influences are taken into account. His conclusions are then tested against some of Wittfogel’s main propositions. On the whole, the more obvious of the propositions are confirmed—for example, the need for some central authority to reconcile cooperation in maintaining irrigation with the potentially disruptive competition for water rights. Other propositions, such as a monopolistic “dominant religion,” are less convincing in the Sonjo context, and the crucial one—Wittfogel’s theory of the emergence of “despotism”—simply does not hold up. Gray himself proposes a less sweeping explanation for the emergence of centralized authority in the Sonjo village: the demands of maintaining an irrigation system of the type that the Sonjo have cannot tolerate the kind of instability which is created by the coexistence of centralized government and segmentary lineages and which, under other ecological conditions, may be tolerated.

This test case puts a welcome empirical damper on the grander generalizations. There is an obvious need for additional test cases from the same East African culture stream (for example, the Chagga) and from some Central Asian societies where the irrigation network sometimes seems to be a concrete replica of the segmentary genealogical system. Such studies would allow further refinements and greater control over that intractable factor, the accidental and often unrecoverable historical component.

IGOR KOPYTOFF

*Department of Anthropology,  
University of Pennsylvania*

## Note

### Desalinization

In **Salt-Water Purification** (Wiley, New York, 1962. 177 pp. \$7.50) K. S. Spiegler reviews the state of the art of purifying salt water. The book is designed, as the author intended, for a wide audience with backgrounds that range from those of scientists and engineers to those of politicians. There

are chapters on energy requirements, distillation methods, electrodialysis, freezing processes, and ion exchange, but as a result of the popular treatment, the thermodynamics and physical-chemical principles of unit operations are too “watered-down” and lack the rigor demanded by technical readers. However, the book is written in an interesting style, and it is filled with a variety of facts and figures on the energy and economics of competing processes, including descriptive material about plants that are in operation and their practical problems.

Although the bibliography is not extensive, it attempts to cover important papers from periodicals and major review works.

D. M. MASON

*Chemical Engineering Department,  
Stanford University*

## New Books

### Biological and Medical Sciences

**Pharmaceutical Calculations.** Willis T. Bradley, Carroll B. Gustafson, and Mitchell J. Stoklosa. Lea and Febiger, Philadelphia, ed. 4, 1963. 357 pp. Illus. \$5.

**Physiologie.** vol. 1, *Introduction historique: Les fonctions de nutrition.* (958 pp. F. 80); vol. 2, *Système nerveux. Muscle.* (1101 pp. F. 95). Éditions Médicales Flammarion, Paris, 1963. Illus.

**Plant Metabolism.** G. A. Strafford. Harvard Univ. Press, Cambridge, Mass., 1963. 160 pp. Illus. \$2.75.

**Plant Tissue and Organ Culture.** Proceedings of a symposium (Delhi, India), December 1961. P. Maheshwari and N. S. Ranga Swamy, Eds. International Soc. of Plant Morphologists, Delhi, India, 1963. 455 pp. Illus. \$7.50.

**Reflex Mechanisms in the Genesis of Epilepsy.** Proceedings of a symposium (Prague and Liblice, Czechoslovakia), September 1960. Z. Servit, Ed. Elsevier, New York, 1963. 270 pp. Illus. \$11.

**Research Methodology and Potential in Community Health and Preventive Medicine.** Harold E. Whipple, Ed. New York Acad. of Sciences, New York, 1963. 337 pp. Illus. Paper. \$5.

**Studies on Microalgae and Photosynthetic Bacteria.** A collection of papers. Edited by the Japanese Soc. of Plant Physiologists. Univ. of Tokyo Press, Tokyo, 1963. 670 pp. Illus.

**Tissue Respiration in Invertebrates.** Dorothy E. Bliss and Dorothy M. Skinner. American Museum of Natural History, New York, 1963. 149 pp. Illus. Paper.

**La Tolerance Acquisée et la Tolerance Naturelle à l'Égard de Substances Antigéniques Définies.** A symposium (Royumont, France), June 1962. Editions du Centre National de la Recherche Scientifique, Paris, 1963. 490 pp. Illus.