

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.

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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.

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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.

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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 Acquise 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.