ricultural Organization (FAO) mandated in Resolution 8/83 that elite and proprietary germplasm, developed in the industrialized countries, be made available free-of-charge to Third World countries. One senses the formation of a "genetic OPEC" in the Third World. Several Third World nations have, in fact, already closed their borders to the export of important seed types and plant germplasm.

Seeds and Sovereignty assesses the controversy over germplasm in the five years since the passage of the FAO Resolution. The book, an extension of a session at the 1986 conference of the American Association for the Advancement of Science, is organized in three principal sections. The first gives an historical perspective of the germplasm controversy. The second section presents both Third World and industrial points of view regarding patent rights on plant germplasm, the internationalization of the seed industry, and the implications of the germplasm debate on the International Agricultural Research Centers. The third section focuses on legal protection for developers of new plant varieties. The authors attempt to reconcile the need for proprietary protection in the industrialized world with the demand for improved genetics to enhance food production in the Third World.

As anthologies go, this work is spotty. The chapter by Brockway on germplasm movement from colonial times to the present is fascinating. The chapters prepared by Kloppenburg and Frankel clearly frame the germplasm debate and the issues outstanding between industrialized countries and the Third World. Also, the chapter prepared by Barton and Christensen suggest interesting options for industrialized countries to compensate the Third World for genetic materials. I found these chapters factual, analytical and precise.

Many of the other chapters, however, especially those authored by staff of International Research Institutes and governments, were dry accounts of organizational structures and breeding successes. The chapter by Goldstein, supposed to be about molecular biology and the protection of germplasm, is a glib rendition of arguments over germplasm ownership written in almost a tabloid style, with no mention of molecular biology. The primary chapter on plant biotechnology by Orton defines the technical methods and approaches, but does not analyze their impact on the germplasm controversy.

This work is approximately three times longer than necessary. A simple articulation of the issues with a pro/con discussion of each would be sufficient to understand the germplasm controversy. This lengthy book only demonstrates that different individuals in different parts of the world have varying views about the availability and exchange of germplasm resources. Despite this shortcoming, this volume clearly and factually addresses the subject. The overall impression I derived from this book is that all parties are in a stalemate. We are no further along in our resolution of the germplasm controversy than we were when the FAO Resolution was passed. The prospects for resolution of the plant germplasm controversy are not bright. By analogy, one only need look at the Greek sculptures from the Acropolis, on display at the British Museum in London since 1816. The Greek government has requested their return many times, to no avail. Oh, how slowly issues of physical possession and ownership are resolved!

George H. Kidd is Vice President of L. William Teweles & Co., Milwaukee, WI.

RECOLLECTIONS OF THINGS PAST

***Memory Traces in the Brain.* By Daniel L. Alkon. Pp. 190. ISBN 0-521-35867-1 (Paperback). $14.95. (Cambridge University Press, Cambridge, UK: 1988).**

Daniel Alkon has written a very old-fashioned book with some very new-fashioned ideas. Old-fashioned, because it is conceived and executed in the almost extinct tradition of the scientific-philosophical monograph. In this sense it reminded me of Sir Charles Sherrington's *The Integrative Action of the Nervous System*. And it is completely contemporary—its theme is the elucidation of the basic molecular-cellular mechanisms used by a nervous system to encode associative memories. One of Alkon's aims is to demonstrate that these mechanisms are distinct from those involved in the related phenomena of habituation, sensitization, and adaptation.

Remarkably in such a brief text, Alkon takes the reader on a long journey. He begins with a careful semantic and historical analysis of the idea of memory, and proceeds elegantly through a dense amount of experimental data and interpretation that show the structural and electrophysiological bases of true associative learning in the nervous system of his favorite invertebrate, the nudibranch mollusc, *Hermissenda crassicornis*. In the remaining five chapters, he extends these ideas to the mammalian brain—as studied in the rabbit—and concludes by reviewing the categories of models for associative learning that are consistent with this empiricism.

"Begot in the ventricle of memory, and delivered upon the mellowing of occasion"

What emerges, apart from the images of a clear scientific intellect trying to establish phenotypic rules for a mental process, is a glimpse of what some of these rules actually are. One underlying principle is that associative stimuli affect convergent neuronal pathways—whether simply connected, as in *Hermissenda* at the input stages of the pathway, or more complexly, after serial activation of several synaptic junctions, as in the rabbit. A second is that the structural network itself adapts, and leaves a discernible memory trace in the form of altered potassium currents.

While not a geographical survey map of the territory, *Memory Traces in the Brain* adds considerable detail and dimension to the previously available periplos, and provides the outlines for future explorations, both conceptual and experimental. As such, it will be of interest and value to students of the nervous system at every level.

Harvey Bialy, Ph.D. is the research editor of *Bio/Technology*.