organisms respond to environmental stress by rapidly changing their patterns of gene expression. Within minutes of an increase in temperature or the infliction of other stresses, there is a dramatic increase in synthesis of a limited number of proteins, referred to as heat shock or stress proteins. These proteins, which accumulate rapidly to become major cellular components, are thought to protect cells in some way from the deleterious effects of the stresses that induce their synthesis.

The unifying theme of this collection of papers on a variety of plant and animal systems is the universality of the response. About a third of the volume is devoted to aspects of the response in *Drosophila*, with the remainder equally divided between other animals and plants and fungi. The section on *Drosophila* contains chapters on the organization of the genes for the stress proteins, mechanisms for the regulation of expression at the transcriptional and translational levels, and the possible functions of the encoded proteins. On the whole these papers are quite successful in providing the reader with a sense of the current understanding of the stress response in *Drosophila*, for the authors have made an effort to put their own work into the context of the present state of knowledge in the field, as well as giving experimental results from their own laboratories. As an example, a paper by Southgate *et al.* provides a comprehensive summary of the organization and relatedness of the *Drosophila* heat shock genes, as well as a cross-species comparison of the conservation of these genes in evolution.

The two remaining sections are less organized, each being an assortment of papers dealing almost exclusively with the authors' own research on particular cell types, organs, or species. A paper entitled "Stress response in avian cells" by Schlesinger stands out; it is a lucid, well-organized review of the subject, dealing with the various stresses that can induce heat shock proteins and the tissue specificity of the protein induction and giving an interesting view of the complexity of the response. Unlike most collections of papers concerning the heat shock response, the book provides good coverage of work on plants. Of the 12 papers not dealing with *Drosophila* four are on plants. It is unfortunate that any discussion of the response in yeast has been omitted, since yeast is proving to be one of the systems most tractable to analysis.

Whereas the majority of the papers concentrate on the identification of the proteins synthesized, the stresses that induce their synthesis, or the regulation of the response, two papers in particular emphasize the possible functional aspects of the response. Li and Laszlo summarize their work on the thermotolerance of mammalian cells and the correlation of this thermotolerance with the presence of heat shock proteins. Ort and Boyer discuss the ways in which the adaptation of plants to various environmental stresses is related to photosynthesis and to productivity.

The volume will serve as a good source for readers who wish to obtain an overview of the research on the stress response that is being conducted in diverse organisms. Unfortunately, unlike other monographs in the series Cell Biology, it has no introductory or concluding chapter. An attempt to coordinate material is still very much needed in this diverse and often confusing field.

ELIZABETH A. CRAIG
Department of Physiological Chemistry, University of Wisconsin, Madison 53706

The Environment of East Asia

The Evolution of the East Asian Environment. ROBERT ORR WHYTE, Ed. Tze-Nang Chiu, Chi-Keung Leung, and Chak-Lam So, Associate Eds. University of Hong Kong Centre of Asian Studies, Hong Kong, 1984. In two volumes. Vol. 1, Geology and Palaeoclimatology. xii pp. + pp. 1–413, illus. Paper, $HK120. Vol. 2, Palaeobotany, Palaeozoology and Palaeoanthropology. xii pp. + pp. 415–975, illus. Paper, HK$120. Centre of Asian Studies Occasional Papers and Monographs, no. 59. From a conference, Hong Kong, Jan. 1983.

The Centre of Asian Studies of the University of Hong Kong organized an international conference on the paleoenvironment of East Asia from the mid-Tertiary in order to initiate an interdisciplinary approach to the study of the environment in East Asia. The two volumes under review are the proceedings of that conference. Following a foreword by E. K. Y. Chen and a description of the scope and objectives of the book by R. O. Whyte, there are 59 papers more or less evenly distributed in five sections: geology, tectonics, orogeny, and geomorphology; paleoclimate and the evolution of modern climate; paleobotany, palynology, and the evolution of floras; paleontology and the evolution of faunas; and the physical and biological environment in which humans emerged. A few specialists not at the conference were invited to contribute to the book in order to make its coverage complete. In addition, the book contains two summaries by Whyte, one of the Italian scientific expedition to the Karakoram (or "Karakorum," as local pronunciation and etymology suggest) and the Hindu Kush and one of the International Karakoram Project that was organized by the Royal Geographical Society.

The geographical scope of the conference was defined as the part of Asia from 80°E to 150°E longitude (later extended to 75°E longitude to embrace also the Karakorum and associated ranges) and from 20°N to 50°N latitude. The People's Republic of China makes up by far the largest part of this area, and one of the outstanding features of the two volumes is that they contain a great many results of recent research from the P.R.C.

The central theme of the volumes is the changes that East Asia has experienced in geology, climate, and biota since about the Oligocene. In his introductory paper, Whyte stresses that the rapidly changing tectonic picture of East Asia since the beginning of the Neogene played an important role in controlling other natural factors influencing the evolution of East Asia. Along with most other contributors, Whyte emphasizes the effects of the uplift of the Qinghai-Xizang (Tibet) plateau and of the Himalayan range on the changes that occurred in the climate and biota of East, and especially, of Central Asia. The contributions do not converge on a consensus about the precise timing of the uplift of Tibet, but one gets the impression that none of the contributors seriously entertains the idea that Tibet was anywhere near its present elevation at the beginning of the Pliocene. Paleoclimatic, paleozoologic, and paleobotanic evidence seems to suggest that Tibet was elevated a couple of kilometers at most at the beginning of the Pleistocene. Many argue that Tibet's Pliocene elevation was about 1000 meters above sea level. The renowned Chinese master of Quaternary geology Liu Dongsheng and his co-author Ding Menglin concentrate on the climatic consequences of the uplift of Tibet and trace the effect of the plateau on atmospheric circulation back only to the beginning of the Quaternary. One can infer from the paper that the Neogene uplift of Tibet was insufficient to impede atmospheric circulation, and a contribution by Wang Pinxian supports this inference. In the section on paleozoology the authors are in agreement that the plateau was not a powerful barrier for faunal exchange until the late Pliocene.

This late uplift of Tibet has extremely wide-ranging implications, not only for climatology and biogeography but also for tectonics. In recent years controversy has centered on the role of topography in initiating and sustaining "continental escape," the sideways motion of large chunks of continental lithosphere from loci of intracontinental convergence to avoid excessive thickening of the crust. Data and arguments presented in this book strongly suggest that topography could not have been a major factor in the formation of the present escape system in East and Central Asia. From this point of view, the book is of great importance for geophysicists interested in the behavior of the continental lithosphere. I am surprised that none of the authors even touches upon this subject.

Another interesting aspect of the geological papers is the correlation of deep-sea data on Quaternary climatic changes with those from the loess deposits in China and the Quaternary landforms. The correlation of events between the deep-sea cores and the loess sections was initiated by Liu and his associates both in China and abroad and shows that there is a rather precise match between the two. Such a good match cannot be obtained from a study of the landforms. A. J. Brimicombe points out that in studying the Hong Kong landscape three cycles at most of Pleistocene deposition and erosion need be considered to arrive at a satisfactory evolutionary hypothesis. He also points out that the thresholding and resisting nature of landforms makes them less useful as guides to past climatic changes.

Important data and discussions are included in papers on Quaternary changes in sea level along the east coast of China. The general opinion seems to be that the steady sea level of the past 6000 years satisfactorily explains the observed strand displacements.

As a lay person, I read the paleoanthropology section with much pleasure and benefit. The reports of the emergence of a unique and independent Chinese culture as early as the Paleolithic period are fascinating, and there is impressive documentation that the culture continued to develop without serious interruption to the late Neolithic. Also, data show that the evolution from *Homo erectus* to the present Mongoliform morphology was continuous in China, where cultural evolution involved no Mesolithic period. The 5000 Neolithic sites found in China appear to have considerably expanded our knowledge beyond the Yangshao and Longshan cultures. There seems to be little doubt that Chinese archeology will significantly alter our views of the prehistory of the Old World.

The Evolution of the East Asian Environment is an indispensable component of the working library of any scientist who is interested in the evolution of the physical environment and the biota of East Asia during the late Cenozoic. The book discusses such diverse topics as dentition-food relationships, the environment of the hominid evolution in East Africa, and the usefulness and limitation of pollen analysis, and it contains data that are important for our understanding of the behavior of the continental lithosphere, the nature of controls on atmospheric circulation in general, and the emergence of humans. The book is meticulously edited and handsomely produced. It has independent indexes for subjects, marine organisms, plant names, vertebrate fauna, place names in the People's Republic of China, and geographical names outside China that greatly facilitate its use as a reference.

Publication of a regular newsletter entitled *The East Asian Tertiary/Quaternary Newsletter* was begun after the conference to facilitate continued exchanges of information. It may be subscribed to for $6.50 a year including postage for surface mail by writing to the Publications Secretary, Centre of Asian Studies, University of Hong Kong, Pokfulam Road, Hong Kong.

A. M. C. ŞENGÖR

Department of Geology,
Faculty of Mines,
Istanbul Technical University,
Teşvikiye, Istanbul, Turkey

Books Received

The Adaptive Role of Lipids in Biological Systems. Neil F. Hadley. Wiley-Interscience, New York, 1985. xii, 319 pp., illus. $39.95.

Adhesive Chemistry. Developments and Trends. Lieng-Huang Lee, Ed. Plenum, New York, 1984. xii, 868 pp., illus. $115. Polymer Science and Technology, vol. 29. From a symposium, Seattle, March 1983.

Branching Processes Applied to Cell Surface Aggregation Phenomena. Catherine A. Macken and Alan S. Perelson. Springer-Verlag, New York, 1985. viii, 124 pp., illus. Paper, $11.40.

The Breaking of Bodies and Minds. Torture, Psychiatric Abuse, and the Health Professions. Eric Stover and Elena O. Nightingale, Eds. Freeman, New York, 1985. xvi, 319 pp., illus. $21.95; paper, $11.95.

The Broken Brain. The Biological Revolution in Psychiatry. Nancy C. Andreasen. Harper and Row, New York, 1985. x, 278 pp., illus. Paper, $8.95. Reprint, 1984 edition.

The Burgess Shale. Harry B. Whittington. Published in association with the Geological Survey of Canada by Yale University Press, New Haven, Conn., 1985. xvi, 151 pp., illus. $25.

The Cambridge Atlas of Astronomy. Jean Audouze and Guy Israël, Eds. Cambridge University Press, New York, and Newnes Books, Feltham, Middlesex, England, 1985. 432 pp. $75. Translated from the French edition (1985).

The Cambridge Encyclopedia of Life Sciences. Adrian Friday and David S. Ingram, Eds. Cambridge University Press, New York, 1985. 432 pp., illus. $45.

The Cape Cod National Seashore. A Landmark Alliance. Charles H. W. Foster. Published for Tufts University by University Press of New England, Hanover, 1985. xiv, 125 pp. Paper, $8.95.

Cataclysmic Variables and Low-Mass X-ray Binaries. Donald Q. Lamb and Joseph Patterson, Eds. Reidel, Boston, 1985 (distributor, Kluwer, Hingham, Mass.). xii, 452 pp., illus. $59.90. Astrophysics and Space Science Library, vol. 113. From a workshop, Cambridge, Mass., Jan. 1983.

Cell Ageing and Cell Death. I. Davies and D. C. Sigee, Eds., Cambridge University Press, New York, 1985. x, 363 pp., illus. $39.50. Society for Experimental Biology Seminar Series, 25. From a symposium, Birmingham, England, Jan. 1984.

Cellulose and Its Derivatives. Chemistry, Biochemistry and Applications. J. F. Kennedy *et al.*, Eds. Horwood, Chichester, England, and Halsted (Wiley), New York, 1985. xii, 551 pp., illus. $79.95. From a meeting, Wrexham, Wales.

A Century of Controversy. Ethnological Issues from 1860 to 1960. Elman R. Service. Academic Press, Orlando, Fla., 1985. xii, 353 pp. $48. Studies in Anthropology.

Ceramic Theory and Cultural Process. Dean E. Arnold. Cambridge University Press, New York, 1985. xii, 268 pp., illus. $37.50. New Studies in Archaeology.

Chemicals from Coal. New Developments. K. R. Payne, Ed. Published for the Society of Chemical Industry by Blackwell Scientific, Palo Alto, Calif., 1985. vi, 122 pp., illus. $55. Critical Reports on Applied Chemistry, vol. 9

Chemie und Gesellschaft. Herausforderung an eine Welt im Wandel. Gernot Boche, Ed. Wissenschaftliche Verlagsgesellshaft, Stuttgart, and Umwelt & Medizin, Frankfurt, 1984. 215 pp., illus. DM 68. Marburger Forum Philippinum. From a forum, Marburg, Germany, 1983.

Chemistry of Atmospheres. An Introduction to the Chemistry of the Atmospheres of Earth, the Planets, and Their Satellites. Richard P. Wayne. Clarendon (Oxford University Press), New York, 1985. xii, 361 pp., illus. $39.95; paper, $19.95.

The Chemistry of Weathering. James Irving Drever, Ed. Reidel, Boston, 1985 (distributor, Kluwer, Hingham, Mass.). viii, 324 pp., illus. $44. NATO ASI Series C, vol. 149. From a workshop, Rodez, France, July 1984.

The Children of Mariel from Shock to Integration. Cuban Refugee Children in South Florida Schools. Helga Silva. Cuban American National Foundation, Washington, D.C., 1985. 68 pp., illus. Paper, $2.

Chloroplast Biogenesis. R. J. Ellis, Ed. Cambridge University Press, New York, 1985. xiv, 346 pp., illus. $70. Society for Experimental Biology Seminar Series, 21. From a symposium, Leiden, 1982.

Circulatory Shock. Basic and Clinical Implications. Herbert F. Janssen and Charles D. Barnes, Eds. Academic Press, Orlando, Fla., 1985. xii, 242 pp., illus. $39.50. Research Topics in Physiology, 7.

Collected Papers of Kenneth J. Arrow. Belknap (Harvard University Press), Cambridge, Mass., 1985. vol. 5, Production and Capital. x, 481 pp., illus. $29.50. Vol. 6, Applied Economics. x, 270 pp. $22.50.

Combinatorics for Computer Science. S. Gill Williamson. Computer Science Press, Rockville, Md., 1985. xliv, 479 pp., illus. $39.95. Computers and Math Series.

Computer Simulation of Space Plasma. H. Matsumoto and T. Sato, Eds. Terra Scientific Publishing Company, Tokyo, and Reidel, Boston, 1985 (distributor, Kluwer, Hingham, Mass.). x, 380 pp., illus. $67. Advances in Earth and Planetary Sciences. From a meeting, Kyoto, Japan, Nov. 1982.

Constructing the Universe. David Layzer. Scientific American Library, New York, 1985 (distributor, Freeman, New York). xiv, 313 pp., illus. $27.95.

The Continuous Wave. Technology and American Radio, 1900–1932. Hugh G. J. Aitken. Princeton University Press, Princeton, N.J., 1985. xviii, 589 pp., illus. $67.50; paper, $19.95.

Endocytosis. Ira Pastan and Mark C. Willingham, Eds. Plenum, New York, 1985. xviii, 326 pp., illus. $42.50.

Enigmas of Chance. An Autobiography. Mark Kac. Harper and Row, New York, 1985. xxviii, 163 pp. $18.95. Alfred P. Sloan Foundation Series.

Entering Space. An Astronaut's Odyssey. Joseph P. Allen with Russell Martin. 2nd ed. Stewart, Tabori and Chang, New York, 1985. 240 pp., illus. $24.95; paper, $16.95.

Everest. The Testing Place. John B. West. McGraw-Hill, New York, 1985. xiv, 187 pp. + plates. $18.95.

Everyone Here Spoke Sign Language. Hereditary Deafness on Martha's Vineyard. Nora Ellen Groce. Harvard University Press, Cambridge, Mass., 1985. xiv, 169 pp., illus. $17.50.

Evolution of Prokaryotes. Karl H. Schleifer and Erko Stackebrandt, Eds. Academic Press, Orlando,

(Continued on page 834)