

Biology of the gene

Gene Expression. Vol. 1: *Bacterial Genomes*. Pp. xvii+642. June 1974. £4.75. Vol. 2: *Eucaryotic Chromosomes*. Pp. xiv+467. September 1974. Benjamin Lewin. £8.00, cloth; £3.95, paper. (Wiley, London and New York.)

GENE EXPRESSION, originally intended as a revision of Benjamin Lewin's earlier successful treatise, *The Molecular Basis of Gene Expression*, reflects the growth of knowledge in the field and has expanded to become two major volumes.

Volume 1, *Bacterial Genomes*, reviews the extensive progress in the molecular genetics of prokaryotes over the past five years. The coverage is not limited strictly to gene expression, but includes the closely allied topics of recombination, DNA replication and cell division. The biochemically biased exposition, intended for advanced students and specialists, demands familiarity with both microbial genetics and nucleic acid biochemistry.

Lewin presents his subject through a critical appraisal of the key experiments, occasionally including carefully selected data. The clarity of the presentation is enhanced by the well designed diagrams. Original papers are abundantly cited; curiously though, references to the decisive experiments seem too often absent.

Volume 2, *Eucaryotic chromosomes*, contrasts strikingly with Volume 1 in the lack of precise information deriving, quite naturally, from the relative complexity of the subject. Lewin argues that sufficient advances have been made in our knowledge of eucaryotic gene expression to justify this attempt at proposing "a preliminary conceptual framework".

The first part of Volume 2 is devoted to the ultrastructure of eucaryotic chromosomes and its variation during the life cycle. The very lengthy discourse palls at times, but is alleviated by many excellent electronmicrographs. The analysis of DNA structure from the kinetics of renaturation and hybridisation is well explained, but the need for a sharper tool with which to approach sequence organisation in eucaryotic DNA is apparent between the lines.

The second part of the book is more directly concerned with the expression of eucaryotic genes. The processing of primary transcripts and models for the control of eucaryotic gene expression are prominent. The volume ends with an interesting discussion of the interaction between nucleus and cytoplasm, as studied by nuclear transplantation and somatic cell hybridisation.

Despite Lewin's apologies for his

selectivity, in both volumes he could reasonably have been more selective and thereby more concise. Certain experiments described in great detail are superseded by subsequent reports. Even elegant experiments which have been conclusively refuted are best forgotten. In each volume, after such an array of experimental observations and conclusions, I would have welcomed an attempt to present a wider view, putting recent developments into perspective and discussing their implications for the future. I felt it a pity, too, that the concentration on mammalian cells in Volume 2 meant the omission of those eucaryotic systems most amenable to genetic analysis and, therefore, most likely to yield important information on gene structure and expression.

These minor criticisms should not be taken to detract seriously from the obvious merit of these volumes, the depth, scope and modernity of which will ensure their value to everyone interested in the biology of the gene.

W. J. Brammar

Watching volcanoes

Physical Volcanology. (Developments in Solid Earth Geophysics, vol. 6.) Edited by L. Civetta, P. Gasparini, G. Luongo and A. Rapolla. Pp. xvi+333. (Elsevier Scientific: Amsterdam, Oxford and New York, 1974.) Dfl.90; \$34.75.

THIS book represents the combined efforts of four editors and seventeen contributors to mark the occasion of the retirement in 1971 of Professor Giuseppe Imbo from the directorship of the Vesuvian Observatory.

Like all commemorative books it is very conservative; thus we see again the classic investigations of volcanic seismicity from Japan and of crustal deformation from Hawaii.

That wouldn't matter if the UNESCO book on the same subject had not been published in 1971, but this new book repeats (verbatim in some instances) some 30% of that material.

And the title seems to me to be wrong. The book deals mainly with the application of instrumental techniques in all but two of the fourteen chapters, and though that makes for an excellent reference book, it rather avoids consideration of the underlying physics.

I think that a more interesting volume could have been written under the title of 'Physical Volcanology' if some attention had been given to the physical processes of volcanic phenomena. The physics of lava flows, cone formation, and magma degassing are hardly mentioned, and the more avant garde subjects like the influences of earth tides and local tectonics on eruptions are not seen.

The book, however, contains some very useful reference material for anyone actively engaged in volcanic research. Most of the chapters describe in detail the application and limitations of one or other of the geophysical and chemical techniques that have been successfully used on volcanoes, in each case by one of the contributors, all of whom are acknowledged experts. It is to be hoped, though, that they are not led by the title of Chapter 9 into confusing ashes for gases; and I hope too that their efforts may help avert the great ions (p. 317) resulting from large lava flows.

James L. Brander



Centenarian from a village near Sukhumi on the Black Sea coast. From *Biological Anthropology* (Readings from *Scientific American*). With Introductions by Solomon H. Katz. Pp. 494+340 illustrations. (Freeman: San Francisco, 1975.) \$14.95, cloth; \$6.95, paper.