

Solar radiation

Solar Gamma-, X-, and EUV Radiation. (International Astronomical Union Symposium No. 68, Buenos Aires 1974). Organised by the IAU in cooperation with COSPAR.) Edited by Sharad E. Kane. Pp. xii+439. (Reidel: Dordrecht and Boston, Massachusetts, 1975.) Dfl. 145; \$58.00.

DURING the past decade the rapid advance in instrumental techniques and the extensive use of orbiting observatories has provided a wealth of data on γ -, X-ray and EUV radiation from the Sun. The International Astronomical Union Symposium in June 1974 provided an opportunity for specialists in the field to review the observational results and to describe current theories of solar emission mechanisms and related phenomena. Highlights of the proceedings included reports of preliminary data from Skylab on the newly discovered coronal holes and bright points.

The book is split into three sections covering general solar activity, active regions and solar flares. Each section contains detailed review articles written

by leading authorities on the topics concerned, and summaries of contributed papers announcing the latest results. These include data from ground based telescopes, sounding rockets, balloons and satellites operated by American, European and Russian groups. In addition, the book contains papers on energetic particles and microwave radiation, forming a more complete picture of the solar phenomena in which they play a role. Thirty-nine papers are given in all.

The coverage of the rather broad subject suggested by the title is comprehensive, but inevitably in a collection of articles written independently by a large number of authors some duplication takes place and it is often difficult to refer to specific items of interest. The latter problem detracts a little from the value of the book as a reference volume for its intended audience of research workers and students in solar physics and solar terrestrial relations. Nevertheless, these workers will find it an important and necessary addition to the library of their respective research institutes, if a little expensive for their own bookshelves.

With the bulk of the Skylab data analysis yet to be completed and with the continued high level of activity in observational and theoretical solar studies it seems certain that this account of solar radiation will quickly be superseded. **C. G. Rapley**

but Lamarck comes in for much discussion.

I found some of the biochemical analogies in the book to be colourful, but perhaps not appropriate. For example, on page 268 the development of an egg into a vertebrate is likened to the proteolytic and lipolytic ripening of a cheese: "can develop as it were into a Cheddar, a Camembert, a Brie, etc., as well as into a Stilton".

Such an egg would become pidan rather than a duckling. The 'ripening' of cheese is not directed by the DNA inherently present, as in an egg. Ripening comes about by the degradative action of bacteria, as Waddington points out, by autolysis, or more usually by the growth of moulds. The "glory of ripeness" that he attributes to a Stilton cheese is the odour, taste and other properties of esters, fatty acids, and protein hydrolytic products that result from the decomposition of butterfat, lactose, casein and lactalbumin; a process that leads to putrefaction. What a contrast to the development of an egg—the fantastic spectacle of a DNA molecule at work to make another DNA molecule.

See also the description of protein structure on page 190, where the author says that all but "a small fraction of the amino acid chain" can be regarded as "packing or scaffolding and (has) not much more to do with the activity of the protein than had the scaffolding which allowed (the artist) to lie on his back... to paint the ceiling of the Sistine Chapel to do with the resulting artwork." This is probably an over-simplification of protein structure. For example, the enzyme, thermolysin, has a reactive site that is concerned with proteolysis, but the rest of the amino acid chain folds into a three-dimensional structure that permits only hydrophobic substrates to reach the reactive site.

Professor Waddington's discussions range across a wide scope of subjects, among them the evolution of developmental systems, adaptations, altruism, and language; genetic assimilation; canalising selection; the selection of environment *Drosophila* mutants; sexual isolation; archetypes in evolution; a catastrophe theory of evolution; and some interesting musings on "The human animal" and "The human evolutionary system"; and "Does evolution depend on random search?" His analysis of the "midwife toad incident"—a review of Koestler's book—is most entertaining.

The reader will find that Professor Waddington's book contains many fascinating excursions into evolutionary philosophy and into descriptions of the adaptations and special properties that make living organisms so enthralling to all of us. **T. H. Jukes**

MTP announce the publication of

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Price: £11.50

MTP Press Ltd.,
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Evolutionary thoughts

The Evolution of an Evolutionist. By C. H. Waddington. Pp. xii+328. (Edinburgh University Press: Edinburgh, May 1975.) £6.00.

PROFESSOR Waddington has reprinted twelve of his journal articles (five of them from *Nature*), and twelve excerpts by him from textbooks and symposia volumes. To these he has added two exchanges of correspondence (with T. Dobzhansky and P. M. Sheppard) and four book reviews. Two brief essays, not published elsewhere, are also included. The time span of the material reprinted covers from 1941 to 1974. Some of the subject matter is concerned with *Drosophila* genetics, and there is also a great deal of discussion of the differences between various trends of evolutionary thought.

I have a feeling that the question of the inheritance of acquired characters, so much a target of discussion and refutation by evolutionists, was dealt a mortal blow by the discovery of the molecular mechanism of protein synthesis. This point is not mentioned,