Embryonic events

Jonathan Cooke £28

Developmental Biology: A Comprehensive Synthesis. Vol. 2 The Cellular Basis of Morphogenesis. Edited by Leon W. Browder. Plenum: 1986. Pp.651. \$79.50, £66.95.

LIKE many other areas of science, developmental biology supports a dual publishing industry — the slim volume of ideas and the hefty, multi-author tome of information. The genre in which single authors marshal information to underpin particular ideas is currently, perhaps permanently, out of favour. That may justly reflect the true nature of the beast, i.e. the embryo. Certainly, in referring on average to 140 papers and reviews apiece, the present contributors make their 16 chapters tough going for anyone in search of what the title suggests, a synthetic view.

The brief for the contributors to this, the second volume in the series *Developmental Biology*, was to ask whether the architectural and shape changes in embryos can be understood as the controlled deployment of a restricted repertoire of cellular mechano-adhesive behaviours — or of their molecular bases, if you prefer that level. Some of the authors seem to have long since lost sight of the original enterprise, finding satisfaction merely in the collation of information interlarded with speculation over parochial matters. There are chapters on endogenous lectins, on sea urchins and on early mammalian development that would surely have delighted Diderot, though I cannot believe that encyclopaedism was their authors' intention. Moreover, the central, meatiest chapters are grouped under the hoary rubric of "Cell-Cell Interactions in Development" (CCID!), which in its generality transcends the book's title and attests that, increasingly, editors of such projects pin down contributors in what order they may and invent intellectual frameworks as they go on. But if you belong to the growing number of biologists who assimilate and thrive on information *per se*, you could treat yourself here. And as a bonus, a few chapters rise above the blandness with a level of individual excellence.

The unsatisfactory aspects of the book are foreshadowed in the opening chapter on cytoskeletal dynamics and are confirmed in those on subsystems modulating cell adhesion. These, after all, are the very nuts and bolts for all that is discussed elsewhere, but the authors retreat — sometimes vaguely downcast but elsewhere apparently happy — from proposing any unifying syntax of events among these structures that links them systematically to the behaviours we see in cell groups. One trouble is that the subsistence of cell

adhesiology has been in a mess since the acronym CAM began its proliferation. Some of the cell-adhesion-influencing molecules characterized *in vitro* do look exciting. But we have little idea whether cells summate the effects of individual components such as these, or ignore all but a crucial one, when performing discriminatory behaviours *in vivo*. Yet, as emerges clearly from the discussion of the diverse cell populations that de-epithelialize and migrate, there is a commonality of molecular repertoire — so much so that avoidable redundancy is introduced into the book in several, perhaps under-edited, chapters that appear in succession.

The inseparability of pattern — the often finely tuned positional specificity of cells' mechanical behaviour — from mor-

phogenesis rears its troublesome head in at least two contributions. The authors concerned admit that we have little idea even as to which parts of the cell's machinery underlie the positional modulation of such behaviour, as indeed of later differentiation choices.

I was disturbed to find Keller's chapter on the mechanics of gastrulation, over-long and dense as it is, so relatively engrossing and admirable. Partiality due to my own intimate research-level knowledge? I think not. At his chosen explanatory level, but with due reference to research at levels "above" and "below", he is here pre-eminent in the pursuit of overall understanding in one whole system. □

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Observing life

A.J. Meadows £26

Of Stars and Men: Reminiscences of an Astronomer. By Zdeněk Kopal. Adam Hilger: 1986. Pp.489. £29.50, \$60.

BEYOND doubt, they do not make astronomers the way that they used to. Thirty or forty years ago, British astronomers typically worked on their own. In Britain, theory still dominated observation, as it had done for decades before, and entrants to the profession were still expected to be competent mathematicians. Compare this with the present position, where research groups are common, most astronomers have a background in physics and the British effort devoted to observation exceeds that devoted to theory. The main cause for this switch was the advent of the space age at the end of the 1950s, which brought a flood of newcomers into astronomy with new backgrounds and interests. But the space age was itself one aspect of a wider change that has affected astronomy since the Second World War — the development of new tools for studying the Universe. The first of these was radio-astronomy, in which Manchester and Cambridge led the way in Britain.

Professor Kopal's period of office in the Chair of Astronomy at Manchester stretched for 30 years from the early 1950s, so covering the transition period in British astronomy. In his early days there, most of his postgraduate lecturing was done at Jodrell Bank, but, as time passed, the Astronomy Department itself gradually expanded. Anyone involved in British astronomy during this period will recognize familiar developments in Kopal's story. For example, the lunar mapping project at Manchester, with which Kopal's name was associated during the early days of the space age, is almost a

prototype of the group research activity now firmly established in astronomy.

Kopal's original astronomical training in pre-war Czechoslovakia was along traditional lines, but he was also an enthusiastic observer from an early age. With typical initiative, he financed his first major observing trip — at the age of 22 to view a solar eclipse from Japan — by translating and publishing a Czech version of James Jeans's *The Mysterious Universe*. He became a frequent and enthusiastic traveller; yet most of his working life was spent in two places, first Harvard and then Manchester. At both, he was known for his willingness to speak his mind. Indeed, when he came to Britain he was particularly known as the man who had clashed with the then doyen of American astronomy, H.N. Russell. Kopal devotes several pages to this argument along with his (somewhat ambivalent) impressions of Russell. More generally, he was obviously unhappy with post-war developments in East Coast astronomy. He comments at length on what he sees as the downhill path of the Harvard College Observatory after Harlow Shapley retired as director. Nor were his days in Britain totally without controversy. For example, he rehearses at some length the debate that surrounded the setting up of a new journal, *Astrophysics and Space Science*, with himself as editor in the late 1960s.

Though Kopal is a firm proponent of modern astrophysics, he retains something of the scholarly tradition of an earlier era, when professors were expected to be able to talk about almost anything. In consequence, his story wanders off into many interesting by-ways: but the main theme — the rise of modern astronomy — shines clearly throughout. □

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