

Science or scholarship for students of developmental biology?

D.R. Newth

Patten's Foundations of Embryology, 4th Edn. By Bruce Carlson. Pp.672. ISBN 0-07-009875-1. (McGraw-Hill: 1981.) \$30.25, £16.25. *Development*, 2nd Edn. By Gerald Karp and N.J. Berrill. Pp.692. ISBN 0-07-033340-8. (McGraw-Hill: 1981.) \$32.95, £18.25. *Developmental Biology*. By Leon W. Browder. Pp.602. ISBN 0-03-056748-3. (Holt, Rinehart & Winston: 1980.) \$28.95, £13.95. *Introduction to Embryonic Development*. By Steven B. Oppenheimer. Pp.404. Hbk ISBN 0-205-06899-5; pbk ISBN 0-205-07348-4. (Allyn & Bacon: 1981.) Hbk \$23.95, £16.50; pbk £8.95.

THE student of developmental biology, or of its senior component animal embryology, does not lack for possible textbooks. However, perhaps paradoxically, only the most elementary can afford to be comprehensive, the more advanced being tempted to specialize in one of two ways. They may be restricted systematically, dealing for example, only with animals, only with vertebrates or only with *Xenopus*. Or they may be mechanism based and call widely upon prokaryote, unicellular, and plant and animal multicellular systems for illustrations of their themes. In either case one senses a certain discomfort in the authors and fears a lack of satisfaction in the student reader.

Of the four books now considered, one — Carlson's revision of Patten — is unashamedly selective both systematically and thematically. It derives from an earlier book which celebrated the developmental anatomy of chick, pig and man but had little use for other material. Dr Carlson has now remodelled the work with the object of narrowing the gap between accounts of formal changes in developing animals and their experimental analysis. His main changes have been to stress the morphogenesis of organs that have been important in analytical work, to give an account of limb development that is a genuine integration of the formal and the analytical, and to introduce experimental findings at points where they help to solve anatomical problems.

The material is presented clearly and the book is abundantly and effectively illustrated. The student will gain from the self-imposed limitation of the treatment in that at the end he or she will feel confident of, and in, what has been accomplished. Dr Carlson provides an introduction to laboratory studies on early chick development as a long appendix.

Karp and Berrill have produced a very much revised and improved second edition of a fairly ambitious text. They cover so much and their treatment is so good in so many ways, that it seems churlish to question the coherence of the picture of development that emerges. And yet, after the early chapters in which a deve-

lopmental story unfolding can be discerned, the book inevitably fragments into sections whose sequence seems arbitrary. This, I must emphasize, is not meant as a criticism only as an acknowledgement of the impossibility at the present time of ordering our presentation of developmental problems consistently.

Plants apart — and few texts successfully integrate them with animal material — the systematic coverage is catholic, and the emphasis biological. That is to say that the biochemical and molecular biological approaches do not predominate, although usefully presented at many points.

Karp and Berrill, in my view, offer one of the half-dozen best general texts of developmental biology now available in English. They will run to a third edition no doubt, and may then take the opportunity to improve the proof reading, most especially in correcting the spelling of proper names.

Browder's *Developmental Biology* is also a large and ambitiously conceived work, but leaning more heavily upon molecular biology, and being somewhat kinder to plants. It has the virtue of clarity and is well illustrated, but it too shows that selection of material has been a serious problem. It would not be simply an act of piety to include discussion of, say, the development of the immune system and of the origin of antibody diversity in a textbook of developmental biology, especially in one which concentrates on biochemical and cellular matters. Yet Browder skates over these and a number of other fields which might have been expected to attract him; amphibian metamorphosis, for example, is given

cavalier treatment.

Yet his discussions of the matters that he deals with are well balanced and should incite students to explore the original literature. Especially in the area of gene control of development, his accounts are among the best available at this level.

Oppenheimer's book is the shortest and claims only to be an introduction. It is eclectic in coverage, but not very kind to plants. It is written with enthusiasm, is sometimes a little careless, but deals with most of its topics in a stimulating way. However, as with so many elementary introductions, it does not avoid the danger of unquestioning acceptance of matters which are not quite as certain as all that. In a section quaintly headed "Gastrulation in Amphibian" (*sic*) is given a not very good account of the process in question, but with no suggestion that it may still have uncertainties or that it may vary from one amphibian species to another. Yet it does. Nor is bird gastrulation so simple, or so well understood, as the student reading Oppenheimer might believe.

These are, of course, complaints of a kind that most elementary texts invite. To avoid them is difficult, but the attempt must be made if the reader is to be helped into science rather than into scholarship.

The authors of all these books have clearly gone to some trouble with their illustrations. Many, especially the scanning electron micrographs, are excellent. But publishers will have to take greater pains to ensure that their production methods are equal to the challenge. □

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Biology: broad brush for a large canvas

E.C. Cox & R.M. May

A View of Life. By Salvador E. Luria Stephen J. Gould and Sam Singer. Pp.806. ISBN 0-8053-6648-2. (Benjamin/Cummings: 1981.) \$26.95, £10.95.

THIS introductory biology text aims to concentrate on "the great themes and arguments of biology", rather than to offer the encyclopaedic catalogue that characterizes many of its competitors. The result is an interesting and unusual text which in places has a minimalist air to it; this is particularly true in the earlier sections, where a lot of the material is simply set forth without critical examination of the historical or contemporary experiments that compel belief.

The broad pattern of organization is the conventional one: beginning with the basic

chemistry of living things, we progress through genetics, developmental biology and the functioning of organisms to evolutionary biology and ecology. The presentation is uniformly lucid, easy to read and backed by first-rate line drawings and other illustrations (along with "boxes" developing special points).

Among the early chapters are some strikingly elegant and careful discussions: the structure of water; allosteric effectors (where the models and figures are superb); introductory genetics and gene regulation in bacteria. The molecular biology is not as contemporary as one might wish, virtually passing over much of the exciting new work on the gene structure of higher eukaryotes (such as gene inserts, the splicing together of variable and constant regions of the