

revelation. Several of the symposium participants either knew, or at least spoke to this Swiss-German-American Jew. No narrow-minded scientist he, we are assured. Einstein liked (even played!) chamber music, discussed Spinoza, rode on trams. He also lived through a time of intense political and social upheaval, and championed a variety of causes.

Remembering Einstein evokes among physicists a curious amalgam of humility and conceit. Who could ever aspire to such a complete mastery over their chosen subject? Measured against the Einstein standard, we are all lesser scientists. Yet we, the community of physicists, claim Einstein as one of our own, and love to dazzle each other, and the wider public, with the brilliant advances that Einstein stimulated.

Was Einstein a true genius who would have succeeded in any chosen activity, or

was he merely a man of the moment, thinking in the right way at the right time about the right sort of problem? If he lived today, would his contributions to physics be as profound and far-reaching? Somehow I do not think so. Yet that is not to demean his achievements, which are paralleled only by Newton. Because of Einstein the world is a far richer place.

This centennial volume, like the others, is a patchwork. The joins are smoothed somewhat by augmenting the technical papers with comments from subsidiary speakers, together with a few rather unsatisfactory open discussions involving a good deal of rambling. It is, however, a delightful addition to one's library, and an invaluable source of Einstein stories. □

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## Limb diversity, what can be more curious?

Julian Lewis

*The Development of the Vertebrate Limb: An Approach through Experiment, Genetics, and Evolution.* By J.R. Hinchliffe and D.R. Johnson. Pp.266. ISBN 0-1985-7552-1. (Clarendon/Oxford University Press: 1980.) £20, \$59.

THE question of the relationship between evolution and embryonic development is forever tantalizing. The experts on each of these topics feel that somehow they hold the key to the understanding of the other; and yet it is remarkably hard to translate the feeling into a real and useful new insight. Hinchliffe and Johnson preface their monograph with an apt quotation from Darwin:

What can be more curious than that the hand of a man, formed for grasping, that of a mole for digging, the leg of a horse, the paddle of the porpoise, and the wing of the bat, should all be constructed on the same pattern, and should include similar bones, in the same relative positions?

Though limb proportions have varied, limb topology has remained practically constant. This, as Darwin saw, is evidence that structures evolve in a quasi-continuous fashion, by a succession of small adjustments, rather than by big, single leaps that change the qualitative plan. The important implication for the developmental biologist is that even though the quantitative parameters of limb development differ from species to species, the qualitative principles can be expected to remain almost the same. The search for general mechanisms rests on that proposition. But it is still a proposition that needs to be substantiated directly. Thus Hinchliffe and Johnson's book, though it does not offer any new theoretical insights,

is valuable for the comparative information that it provides.

The authors begin with an account of the evolution and of the diverse adaptations of the vertebrate limb. The core of the book is a review of descriptive, comparative and experimental studies of limb development and regeneration. The final chapter discusses limb mutations. The book is well-written, informative and at times even entertaining. It is, however, rather uneven in its coverage, and, like many reviews, it suffers from the lack of a unifying central thesis. I felt this lack particularly in the chapters on development. These focus on the genesis of the limb skeleton, and touch on many other interesting topics, including some fundamental problems of developmental biology; but the account does not seem to be informed by any clear general conception of the principles of development. Perhaps the authors simply wish to be objective, and to keep their prejudices from obtruding. But it is consequently hard to tell which experiments are to be considered crucial, which models important, which theories right. To borrow a phrase from Hinchliffe and Johnson, I fear that the general reader may be left asking: "Amidst this welter of morphological anomaly and theoretical speculation, what conclusions can we draw . . . ?"

The declared aim of the authors is to provide "a reference book which is at the same time an account of the current 'state of the art'." As such the book should be useful; the experts will be able to bring their own prejudices to the reading of it.

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