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Developing a sense of the past

D.R. Newth

A History of Embryology. British Society for Developmental Biology, Symposium 8. Edited by T.J. Horder, J.A. Witkowski and C.C. Wylie. *Cambridge University Press: 1986. Pp.477. £60, \$99.50.*

WE MAY reasonably date the birth of modern embryology from the middle years of the last century, and name von Baer as the midwife. It was then, after all, that the words embryology and embryologist entered the language, and then that embryologists accepted a share in the eminently practicable programme of comparative anatomy. Both comparative anatomy and descriptive embryology were, of course, soon to be swept up in the Darwinian revolution, and many embryologists welcomed their new role as seekers for recapitulated phylogenies and were content to wait for the expected reward, an explanation of just how the events of ontogeny could be determined, in sequence, by information from numberless generations of adult ancestral forms. In his essay in this volume, Ridley charts the history of post-Darwinian embryology in Britain, and brings to life the personal and scientific factors shaping it between the time of Balfour and the 1930s.

Other embryologists preferred to tackle the nature and control of developmental processes more directly, with the methods of *Entwicklungsmechanik*. For them cell theory and genetics provided the real boundaries of the area in which theories of development could usefully operate. A hundred years after experimental embryology started is, perhaps, a suitable time to try to assess its achievements and failures.

Despite the title, this symposium volume does not constitute "a history of embryology", nor even its history over the past hundred years. Rather, in 15 papers linked or introduced by editorial comment, it provides something of the flavour of the period and critical accounts of the work and attitudes of some of its leading figures. Of the contributions that deal

mainly with individual scientists (Weismann, Boveri, Morgan, Harrison, Spemann and Waddington) the treatment of Hans Spemann by Horder and Weindling is the most ambitious. Spemann's scientific life is related both to the embryological and to the academic and social environment in which he worked. This gives us a satisfying complement to the impersonal history of the primary inducing factor written by Saxen and Toivonen and the relevant parts of the more personal account by Jean Brachet of the beginnings of biochemical embryology.

The fact that inductive and organizer phenomena were discovered and investigated by embryologists, and were clearly biologically important, gave attempts to explain them in cellular and biochemical terms a symbolic value for embryology. The disappointment when early hopes were not realized persists to this day and colours most comments on the present status of organizer work. The dispersal of the Spemann school by Nazi politics and by war was not the real trouble, it only exacerbated an existing crisis. One suspects that this crisis, as much as anything, prompted Medawar's reproach that "there has therefore been little sense of progression or timeliness about embryological research". Forty years hence, in retrospect, it may be possible to take a more cheerful view, but the central position once held by induction is unlikely to be restored.

To respond to an inductive stimulus a cell must both be competent and in the right place (that is, in contact with the inducer). But cell position, if known to the cell, could alone be a sufficient cue to appropriate developmental behaviour, as Driesch first proposed for highly regulative systems. The idea has since had a varied history, which is lucidly surveyed by Wolpert whose own formulation of the concept of positional information is free from the imprecisions of some of its predecessors and from the deficiencies of others.

Of the contributors dealing with the relations between embryology and genetics, two make it their sole theme. Allen's account of T.H. Morgan sees him as an important agent in the creation of a still-unhealed split between the two, but not as

The book

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