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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

*We come from halls of Academe
And, on an inspiration,
Alone, or in a learned team,
Embark on publication.*

*We seek to teach, or disabuse,
Where controversy rages,
And press our honest facts, or views,
On academic pages.*

*Then, if our theories endure,
Maintained by erudition,
Our luck and virtue should assure
A third or fourth edition.*

*For ultimately all should know
The fruits of our endeavour.
Though scholars come and scholars go,
Our books go on for ever.*

Ralph A. Lewin

the maker of that split; indeed, given the nature of the material in each case, some divergence was inevitable. Morgan himself always conceded that a complete genetic theory had to come to terms with the problems of embryonic development even if it was not designed to solve them. Sander, in his contribution, takes the split as his starting point and explores the interface between genetics and insect development that has nevertheless arisen and proved very fruitful.

This volume shows that the legacy of Needham in Britain and of Oppenheimer in the United States is being built upon by a new generation, some working embryologists, some historians of science and some philosophers. They are finding plenty to interest them in twentieth-century biology where the sources are, naturally, far richer than for earlier times. Only

the very closeness of their material will embarrass them, and not only for the reason that Sander mentions: the risk of ruining friendships of long standing "when the deeds and thoughts of living persons are involved". All embryologists and many other experimental biologists will be glad of this book for itself, but also for the promise it implies of further historical work to come. I have only two complaints. Sooner or later, and better sooner than later, we shall have to convert lip service to unifying trends in biological science into action by taking plant material into consideration. But if this volume lacks plants it certainly does not lack misprints. □

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Terms of medicine

D.J. Weatherall

International Dictionary of Medicine and Biology. Editor-in-chief Sidney Landau. Wiley:1986. Three volumes, pp. 3,200. \$395, £285.

IN HIS excellent biography of Samuel Johnson, John Wain quotes a telling passage that sums up that remarkable man's emotions on completing the *Dictionary of the English Language*, published in 1755: "I have protracted my work till most of those whom I wish to please have sunk into the grave, and success and miscarriage are empty sounds. I therefore dismiss it with frigid tranquillity, having little fear or hope from censure or from praise". Although less self-revealing than Johnson, Sidney Landau, in his editor's note which introduces the *International Dictionary of Medicine and Biology*, leaves the reader in little doubt that, despite the advantages of computerization and a large committee of co-editors, the lexicographer's lot has not changed much over the years.

The sheer statistics of this new endeavour are staggering. The *Dictionary* contains more than 151,000 terms and more than 159,000 definitions (I have taken the editor's word for the accuracy of these and the other figures). Its computerized database consists of about 27.5 million keystrokes or characters, corresponding to 22 million printed characters or about 30 books of a standard length. The editor-in-chief has been helped by 81 advisory editors, 10 co-advisory editors and 90 contributors who dealt with the definition of more than 70 subjects. About two-thirds of the advisory editors are American, the rest British. The total gestation period was 11 years.

The object was to cover the traditional medical sciences, and, in addition, those areas of the biological sciences which relate to the practice of medicine. The collection is not limited to current usage, though terms which were obsolete by the time of the First World War are excluded unless of particular historical interest. The *Dictionary* also includes the derivation and alternative usage of every term defined. Usage is American throughout; British spelling is occasionally cross-referenced (e.g. for *foetal* see *fetal*).

What is the reviewer to do, faced with over 3,000 pages of lists of medical terms and biological potpourri? Pope's instructions to the critic to "survey the Whole, nor seek slight faults to find" never seemed more apposite. And, viewed in this way, the whole is very impressive. The definitions are clear and unambiguous, the nomenclature consistent and the method of cross-referencing, an enormous problem in work of this size, very effective. The volumes are well produced and built to last, and the print is clear and attractive. The scope is enormous. Syndrome lovers will have a field day, with 43 pages containing nearly 800 entries among which are some genuine collectors' pieces such as the *whistling face-windmill vane hand syndrome*. There are even flashes of relief, not always intentional one suspects. After many exhausting pages which list every conceivable human muscle the next entry is *muscle-bound*, defined as *possessing an excessive physical musculature that is functionally suboptimal*. But despite this mass of traditional medical jargon, the work is remarkably up to date, containing as it does much of the vocabulary of molecular medicine.

It is only when the reader, forgetting Pope's advice, examines a particularly familiar topic in more detail that some of the problems of a compilation of this type become apparent. For example, under the

heading *Anemia* there are nearly 200 entries. Many are obsolete terms, and at least some of them cross-reference to even more obsolete ones which surely cannot be even of historical interest. And there are some odd entries. *Molecular anemia* for example. I doubt if this term is (or was) used. Here, it is defined as *anemia due to an abnormal hemoglobin molecule*. Presumably the confusion is with *molecular disease*, a term which was used by Pauling and Itano to describe sickle cell anaemia in their classical paper in *Science*. And I doubt if many physicians would have much cause to search for *febrile pleiochromic anemia* which is cross-referenced as an alternative to *thrombotic thrombocytopenic purpura*. In some cases it is made quite clear that terms are obsolete or rarely used; in others, such as this one, the reader has to guess. Also, presumably in an effort to be all-embracing, there are some rather gratuitous entries; even allowing for the current state of the health services on both sides of the Atlantic, it is doubtful if many will have occasion to look up *therapeutic pessimism*.

Was all the effort worth it? I think so. With the extraordinary breadth and diversity of the medical sciences there surely is an honoured place for a dictionary such as this, one of genuine scholarship which provides a comprehensive coverage of the language of medicine. Undoubtedly work should start on a second edition. But whether the publishers will be able to find editors to take on this onerous task is another matter. Sidney Landau's editorial note, though low key, lets slip a few of his problems. In discussing the question of obsolescence he points out that the rate of change and continuity of the past varies considerably between specialties; the kind of terms that an immunologist and an anatomist identify as obsolete are very different. Anyone who has sat on a curriculum committee in a medical school will feel for him.

Those who suspect that the medical profession has spent several thousand years developing a language with which to impress its patients and to confuse the world at large can now rest their case; the evidence is set out unambiguously in these massive volumes. But this grand obscurantism still has its advocates. Surely, they would argue, those unfortunate enough to have measles involving the lung might feel just that bit better, or at least impress their friends or, perish the thought, their bank managers, if they arrived home with the label Swyer-James-Macleod syndrome (or the Swyer-James syndrome; or the Macleod syndrome; or, best of all, the Swyer-James unilateral hyperlucent lung syndrome). □

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