

## Book Reviews

**Henry Harris**, *The cells of the body: a history of somatic cell genetics*, Cold Spring Harbor, CSHL Press, 1995, pp. ix, 263, illus., no price given (0-87969-460-2).

The dust-jacket aptly sums up this study by Sir Henry Harris, Emeritus Regius Professor of Medicine and former Head of the Sir William Dunn School of Pathology at Oxford, as “the first scholarly history of research on the genetics of somatic cells”. This is an interesting, elegantly presented, and certainly detailed, account of what might be called the flip side of the usual, well-worn story of the development of molecular biology during the twentieth century. Here, as an entirely different perspective from the now familiar, orthodox, “double helix” version of the origins of molecular biology out of classical (i.e. transmission) genetics, is an account of how genetic mechanisms have been approached through their translational effects in somatic cells, that is through the manifestations of genetics in the differentiation of cells. This alternative history ought, by rights, to be just as interesting and important as the orthodox one, but turns out to have been almost impossibly complex.

The study of the genetics of somatic cells has been inseparable from an understanding of innumerable incidental biological issues, such as cell theory, the nature of mitosis, and the developmental properties of cells, but it has perhaps always had as its ultimate aim the understanding of cancer. As Professor Harris’s account makes very clear, progress has again and again been determined by technical limitations and advances, including those of tissue culture, cytogenetics, cell cloning, establishment of markers of cellular differentiation, human gene mapping and cell fusion. The latter discovery seems to have been a key development in the field, needed, for example, to reveal tumour suppressor genes and map human genes. Some of these techniques themselves led on to important

specific practical spins-off such as monoclonal antibodies. But a comprehensive understanding depended on a complex of ideas and only recently could the claim be made that some sort of natural culmination had been reached in the concepts of cell transformation, oncogenes, and more especially tumour suppressor genes. And now it seems that the field has finally established bridges with the techniques derived from transmission genetics and established a merger on the common ground of the recombinant DNA technologies, the human genome project and the growing interest in the evolutionary homologies of gene molecular sequences across species. Moreover, as Professor Harris finally concludes: “The two great peaks that somatic cell geneticists have long been attempting to scale, cancer and differentiation, seem to have merged into one”.

As history this book is unashamedly internalist. Much of it essentially tracks subjects in which Professor Harris has himself been a participant, through a career, one is reminded, of quite remarkable breadth. Even so the account is admirably dispassionate and fair-minded. The style is dry and the technique is that of a scientific review, in that there is little comment, interpretation or analysis, other than the occasional expression of surprise that things happened the way they did. There is hardly any reference to the literature by other historians. It is in effect a very detailed and fully referenced listing of events and sometimes comes across as a catalogue of “firsts”. The book contains fifty-six portraits of scientists, while another nine illustrations are taken from scientific papers themselves.

The book lays down something of a challenge to historians, although it is far from clear whether it is intended as such. Professor Harris introduces it by saying: “It is difficult to see . . . how someone who is not intimately familiar with the ideas and the technology that underlie a scientific discipline can write perceptively about it”. Although this claim is unlikely to engage the immediate sympathy of

historians, it is surely a point that must be taken seriously. And in a sense this book is a marvellous illustration of the element of truth in the claim. The object of study of the historian of science is the record of scientific events, in all its massive complexity, and ultimately the historian cannot escape his dependence on the record given to him from the participating scientists. This book ought to make salutary reading for professional historians, in that it realistically portrays the sheer complexity of the way science actually happens, though scientists themselves are usually blissfully unaware of many of the causal factors and forces operating. Such a subject defies easy or simple “explanations” or modes of analysis. We surely need books like this to help us to at least approach a familiarity with the facts needing explanation.

Has somatic cell genetics’ time finally come? It is possibly still too early to judge whether Professor Harris’s intimations of completion are historically justified. Is it even a distinct subject in the way this book implies? Or is it somewhat artificially defined around a supposed single future target, particularly a hoped-for cure for cancer? One suspects the story has some way still to go, especially in terms of its potential to lead to new therapies. On this and many of the issues readers are left to come to their own conclusions.

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**Peter J Bowler**, *Life’s splendid drama: evolutionary biology and the reconstruction of life’s ancestry, 1860–1940*, Chicago and London, University of Chicago Press, 1996, pp. xiii, 525, £30.25, \$37.95 (0–226–06921–4).

Peter Bowler, Professor of History and Philosophy of Science at the Queen’s University of Belfast, is a well-known member of the Darwin Industry, and one of the most prolific historians of science at work today. For a good many years, he has been examining aspects of the history of evolutionary biology

in the post-Darwin period, and he is now one of the leading authorities on the subject for the later years of the nineteenth century and the first half of the twentieth century. This is the period covered by his latest book (his eleventh, and most substantial to date), *Life’s splendid drama*—a phrase borrowed from one of the volume’s more important figures, William Diller Matthew.

In his *Eclipse of Darwinism* (1983), Bowler drew attention to the proliferation and prevalence, indeed domination of *non-Darwinian* ideas about evolution in the late nineteenth century—*after* the so-called “Darwinian Revolution”. The world was full of ideas about orthogenesis, neo-Lamarckism, and so forth. Bowler’s earlier study of such topics is developed further here, but in such a way as to encompass a much wider field. He contends (p. 15) that in the late nineteenth century there were researches in evolutionary morphology, palaeontology, and biogeography (to which one might add embryology and taxonomy), which together “interacted to create a network of . . . debates about the course of life’s evolution on earth”.

But hitherto, Bowler argues, this has not been quite the way the matter has been seen by historians. With a tendency to view the past through the lens of present concerns, they have commonly focused attention on the debates about selection, the arrival of Mendelism, and the eventual establishment of the synthetic theory of evolution. Thus in Bowler’s view the true character of late nineteenth/early twentieth-century evolutionary biology has been somewhat distorted. Even if it be granted that selection theory was not accepted for a considerable time, there was, nevertheless, a profound shift in biological understanding brought about by transmutationist ideas. The effort to tell the story of the history of life on earth served in itself as a major research programme.

So Bowler attempts the mammoth task of depicting this complex history. He points to the difficulties that evolutionary biologists themselves constantly faced—specifically the problems involved in recognizing the