therefore indirectly influenced Darwin himself. Apart from any connexion with Darwin, this essay is important as the most recent study of this Italian geologist, a distinguished scientist in his own right. Pancaldi clearly outlines Brocchi's work and opinions, and his approach to such thinkers as Lamarck and Bonnet. Especially relevant is the basic incompatibility noted by Brocchi between the concept of extinction and that of the chain of being, a point of Brocchi's understanding on which Pancaldi throws much light and which is of vital importance for the rejection of the Platonic view of nature that helped to pave the way for Darwin's non-Platonic approach to evolution. Another central idea of Brocchi's was an analogy between individuals and species, a highly debated topic of the mid-nineteenth century, with contributions by Huxley and Forbes.

The second essay deals with what seems to be Pancaldi's present hobby-horse: Luciano Bonaparte. In discussing this influential naturalist, Pancaldi manages to give a vivid picture of some of the debates that excited Italy—by then rather on the edge of European culture—concerning the problem of species and classification from Cuvier to Darwin. Pancaldi also touches on a topic which should be carefully considered by all historians of nineteenth-century natural science, namely *Naturphilosophie*. The third essay deals more directly with the actual reception of Darwin's ideas in Italy, and focuses mainly on Giovanni Canestrini, showing both his agreements and his disagreements with Darwin, especially concerning the origin of man. The fourth essay is, in my opinion, the most important in the book, since it provides not only insight into the work of Federico Delpino but also helps towards an understanding of one of Darwin's least-studied aspects, the theory of pangenesis. Pancaldi has based his study of the relationship between the two naturalists on manuscript sources available in Cambridge, such as the correspondence between them, and Darwin's comments on the margin of Delpino's books, which he read with the help of his wife Emma. There is no doubt that Darwin took Delpino very seriously and was influenced by him. Pancaldi manages to finish on a high note, with a brilliant piece on Cesare Lombroso and the connexion between his thought and not only "Darwinism" but, more broadly, the positivistic approach to science and culture at the time. Pancaldi writes clearly, despite a few ugly and unnecessary neologisms. His is a good and useful book, although it is not the fully-fledged history of natural science in nineteenth-century Italy for which there is a great need. An English translation of this book would be most welcome.

I Congressi degli scienziati contains contributions by a number of Italian historians of science, including Pancaldi himself. As he points out in the introduction, the book cannot compare with, say, Morrell's and Thackray's *Gentlemen of science*, or MacLeod's and Collins' *The parliament of science*, which give a complete view of the scientific influences at work in nineteenth-century Britain. Yet it is a welcome contribution, since it helps to throw light on an aspect hitherto little considered. Although the quality of the contributions is generally good, the length of the papers varies considerably. For example, Bottazzini's paper on mathematics is a thorough and technical essay, whilst other contributions are more lightweight. Personally, I enjoyed most Calcagno's paper on conferences concerning technology, especially agricultural technology. Nicoletta Morello outlines briefly but cogently the geological conferences; Giorgio Tabarroni gives a good account of the origin of the Società Italiana per il Progresso delle Scienze; Minuz and Tagliavini inform us of who the congressmen were; and Pancaldi himself makes a contribution to the knowledge of Hugh Strickland, one of the most important but least known naturalists of the period immediately before the appearance of the *Origin of species*, and considers his correspondence with Luciano Bonaparte.

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ALEXANDER TODD, *A time to remember. The autobiography of a chemist*, Cambridge University Press, 1983, 8vo, pp. viii, 257, £15.00.

Alexander Todd is one of the few chemists in the old baronial style. For many years he dominated organic chemistry and university appointments therein in this country before, at a relatively early age, departing the laboratory for the power structures of science politics; for

some time, he was indeed Almighty, and the writer has reason to be grateful, as it took Todd, then Chairman of the Science Research Council chemistry panel, only three weeks to get funding for the first n.m.r. machine purchased by the S.R.C.

In his foreword, Todd gives as his reason for writing this autobiography the desire to provide the type of information about himself which, as a writer of biographical memoirs, he has found it difficult to obtain about fellow-scientists. In the present volume he covers his life from cradle in a Glasgow tenement (albeit "superior red sandstone") via early years in pre-war and partly pre-Hitler Germany, Oxford, Edinburgh, the Lister Institute, and Pasadena to a Chair at Manchester at the age of thirty, on to the Chair of Organic Chemistry in Cambridge six years later, eventually to the Nobel Prize, the Presidency of the Royal Society, the Chemical Society, the Society of Chemistry and Industry, etc., and finally the House of Lords.

In a chemist's autobiography one might have hoped to get some insight into the development of ideas, for specific clues to the working of the mind of someone in the forefront of international chemistry during a crucial period in its development and how he actually operated in science. Alas, the author tells us little of the inspired leaps of imagination he must have made and their immediate and more remote sources, although he does tell us something of the development of his own research on phosphorylation and nucleotide coenzymes that won him a Nobel Prize in 1957. Anyone wishing to get a vivid picture of how an outstanding chemist thinks and operates would be better advised to read the fascinating, indeed riveting, accounts of the life and works of Gilbert Newton Lewis of the University of California recently published in the *Journal of Chemical Education*, 1984, **61**: 2–21, 92–123, 185–215.

Somewhat more interesting are Todd's accounts of the German PhD system in the 1930s and the politics–and what politics!–surrounding the organization of and appointments to chairs in Cambridge.

Although he knew personally most of the world's leading organic chemists of his time, Todd tells us little other than trivia, and unless the reader is a chemist, he might have some difficulty in finding out exactly who these people are in any case. In 'Chance and design in research' we get a sideways look at the development of Pauling's α-helix and of Watson and Crick's double helix model as reflected in relations (apparently largely non-existent) between the physics and chemistry departments in Cambridge.

This disappointing book is really only 204 pages long (and grossly overpriced), since there are six appendices readily available elsewhere at no cost. These are Todd's presidential address to the British Association (*Advancement of Science* 1970, **27**: 70) and *extracts* from his Anniversary Address to the Royal Society (*Proc. R. Soc. Lond.*, 1977, **196B**: 7; 1978, **200B**: x; 1979, **365A**: xii; 1980, **369A**: 299; 1980, **211A**: 6.

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R. G. W. ANDERSON, *The Playfair Collection and the teaching of chemistry at the University of Edinburgh 1713–1858*, Edinburgh, Royal Scottish Museum, 1978, 4to, pp. viii, 175, illus., £4.50 (paperback).

A.D.C. SIMPSON (editor), *Joseph Black 1728–99. A commemorative symposium*, Edinburgh, Royal Scottish Museum, 1982, 4to, pp. viii, 69, illus., £4.00 + 50p postage (paperback).

Happy is the reviewer with two such excellent publications celebrating the 250th anniversary of the birth of Joseph Black to hand! Anderson's book serves two purposes. The first part is a history of the teaching of chemistry at Edinburgh in its "practical aspects", that is in relation to the facilties and pedagogic tools available to the professoriate. The second part is a catalogue of the apparatus constituting the Playfair Collection at the Royal Scottish Museum. Presented to the then Industrial Museum of Scotland by Lyon Playfair on his accession to the Edinburgh chair in 1858, the collection contains apparatus belonging to his predecessors and informs Anderson's analysis in the first part. This is an approach which historians of chemistry could use more often with profit.