kagu (*Rhynochetos jubatus*), the largest arboreal pigeon (*Ducula goliath*) and a great diversity of endemic geckos and skinks. Environmentally unfriendly open-cast nickel mining is a significant threat, as are forest logging and the introduction of alien species. The section on conservation documents the often inadequate protection status of the unique ecotypes of the region, and lists recommendations for the short term; these include such platitudes as "Development of legislation and policies that promote biodiversity conservation and sustainable resource management".

Peter Seligmann, chairman of the board of Conservation International, contends in his preface that this is an "important book". Whether, in time, it will be seen as such will depend on whether it informs the minds and touches the hearts of the power-mongers. Perhaps more likely, the volume will adorn living-room coffee tables and be the subject of anguished after-dinner conversation about the state of the environment, as well-heeled guests admire the glorious colour prints and sip their Brazilian coffee. ■

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Chemistry's *Canterbury Tales*

A Chemical History Tour: Picturing Chemistry from Alchemy to Modern Molecular Science
by Arthur Greenberg
Wiley-Interscience: 2000. 312 pp. $59.95, £38.95

John Emsley

People in Britain agonize over joining the European monetary system that will be based on a new currency, the euro. And yet 2,000 years ago there was only one currency in Europe and the Middle East, that of the Roman Empire. The gold solidus and silver denarius were legal tender from the north of England to the south of Egypt, from the east of Turkey to the west of Africa.

Political expediency meant that the coinage was often debased, but the Roman emperor Diocletian, who ruled from AD 285 to 300, was determined to stabilize the currency, and, as part of his financial reforms, he ordered the destruction of all alchemical texts. He feared that the practitioners of the black art might find a way of transmuting lead into gold and undo his good work.

Consequently, all the alchemical works throughout the empire were consigned to the flames and with them went the chemical knowledge that had been acquired over the centuries in ancient Egypt. Had it not been for Diocletian's misguided directive, Arthur Greenberg's delightful book might well have contained even more fascinating accounts of the early days of chemistry. Even so, he has written 120 short essays based on books and papers that span the history of chemistry from the Ancient Greeks to Nobel prizewinners.

Greenberg has put his collection in chronological order, grouping them into eight sections: mining of metals; alchemy (including the tricks used to fool the gullible); early medical treatments; the emergence of chemistry as a science; the birth of modern chemistry; farming and industry; teaching and popularizing; and, finally, the theories of bonding. No matter where you dip into this book you will find something of interest, although an item in the alchemy section on the colour of the pottery of the Catawba Indians of North Carolina seems somewhat irrelevant.

Otherwise, the reader can be assured of an informative and entertaining read. The section entitled "Chemistry begins to emerge as a science" is a treasure trove, dealing as it does with the works of Johann Glauber (after whom Glauber's salt, or sodium sulphate, is named), Robert Boyle (regarded as the founder of chemistry), Georg Stahl (he of the phlogiston theory), Stephan Hales (long forgotten, but the inventor of apparatus for dealing with gases), Henry Cavendish (who discovered hydrogen and who unknowingly isolated the noble gases) and Joseph Priestley (of oxygen fame).

My own interest in popularizing chemistry caused me to turn first to the section, "Teaching chemistry to the masses", where I discovered the works of Mrs Jane Marcet, whose 1805 best seller *Conversations on Chemistry* (160,000 copies eventually sold) awoke the interest of the young Michael Faraday. Not only did he turn out to be one of the greatest scientists who ever lived, but he acknowledged his debt to her influence by becoming an equally good popularizer of chemistry himself.

Nor does Greenberg shy away from the more embarrassing attempts by Victorians to give chemistry a popular spin. There is mention of Lucy Rider Meyer's fanciful *The Fairy Land of Chemistry*, in which each element is portrayed as a fairy, and molecules become charming groups of interacting sprites. Greenberg also quotes from J. Carrington Sellars' poetic *Chemistianity*, written in 1873, as if chemistry really were a kind of religion. In his piece entitled "And now turn to page 3 of our chemical psalm book", Greenberg quotes an example of its achingly bad verse:

> *OXYGEN, the Queen of Body Affection;*
> *The supporter of man's Earthual life;*
> *The needed Air-puff for all common forms*
> *Of combustion in term'd live Animals.*

Not surprisingly, *Chemistianity* appears to have made few converts. Yet it is such occasional items that make this book so attractive. Of course, most of the book deals with the seminal ideas in the emergence of chemistry — the story of the discovery of oxygen and the downfall of the phlogiston theory are particularly well told — but its real value lies in the way it acts as a chemical *Reader's Digest*, capturing the flavour of books that are of historical import, but which the average chemist would rarely see or, indeed, now want to read.

Chemistry has a rich heritage of which it can be proud, and yet along the highway to our present state of knowledge there were many by-ways and cul-de-sacs to be explored. The rich tableaux of characters encountered in *A Chemical History Tour* is worthy of *The Canterbury Tales*, and the reproductions of paintings, illustrations from rare old texts and Greenberg's whimsical asides make it particularly enjoyable. Nor is it just an Old Testament of chemistry. Greenberg takes us right up to the modern day in the final section, where he deals with the origins of stereochemistry, radiochemistry, atomic and molecular structure and DNA, ending with the scanning tunnelling microscope and the realization that we can now study atoms one by one. ■

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