BOOK REVIEWS

We must not claim too much for our predecessors. The historian's duty is to understand the past, not to exalt it. All the same, we seem to have lost something. How well they wrote, how clearly and persuasively, all the nineteenth century scientists in this book. None of these papers is a lecture to a lay audience. All were papers for specialists, but written by men who respected words as well as things. Will a future historian be able to say the same of a set of classical chemistry papers of the second half of the twentieth century ?

FRANK GREENAWAY

WHEN CHEMISTS COULD WRITE

Classical Scientific Papers
Chemistry. Arranged and introduced by David M. Knight. Pp. xxiv + 391. (London: Mills and Boon, Ltd., 1968.) 63s. net.

WHY not "Chemistry I" with more to follow ? The papers in this handsome volume of facsimiles are all about atomic theory, which is not the whole of nineteenth century chemistry by any means. But the judicious editor wanted to illustrate (and he has done it admirably) the great debate on the constitution of matter which occupied chemists from Dalton to Ostwald.

Anyone who reads these thirty-one papers, which are roughly in chronological order, will get a sense not so much of progress as of gradual unfolding.

Dr Knight remarks that whereas in 1800 all chemists were atomists, in 1815 (after Dalton's publications) only a minority were. The paradox is explained by the fact that the pre-Dalton atom was subsidiary to the main line of chemistry, an idea of little quantitative significance. The post-Daltonian atom, on the other hand, had to be taken seriously: either adopted or rejected. One fascination of this story is that the alternatives to the atom were other quantitative interpretations of a stoichiometry which Dalton and his commentators had helped to make rigorous. The anti-atomists could not avoid the consequences of Dalton.

The words of the debate were about atoms. The spirit of the debate, however, as Dr Knight reminds us in his short but illuminating introduction, was about the relative merits of theoretical entities and observables. There are six groups of papers, each with an explanatory note: "The Atomic Theory in Chemistry"; "Scepticism about the Value of the Theory"; "The Boscovich Atom and the Theory of Matter"; "Kinetic Theories"; "The Atomic Debates"; and "The Problems are Resolved". Further reading lists are given, mainly of recent works which will lead the historian to all the earlier references he wants.

Some famous material (Avogadro, Cannizzaro, for example) is left out because it is already easily available in good modern English editions. This is no shortcoming, for Dr Knight is right in claiming that his choice of papers will give the reader a sound idea of the sources from which the English speaking chemist got his leading impressions of the current events in this area.

I can recommend this collection to the historian who knows what to expect. However, it can also be recommended to the unhistorical chemist; he will get some surprises. Any modern chemist reading Wollaston's Bakerian lecture of 1812 for the first time will be astonished to find what is really an ionic sodium chloride type crystal lattice predicted in the course of a deeply perceptive appreciation of the crystal structure of matter. Crookes's address to the British Association in 1882, in which he sketched a very modern-looking theory of the evolution of elements in stars, is equally likely to make one wonder whether, for all our quantity of science, we have moved so far in imaginative quality.

COMPUTING CONFERENCE

University Education in Computing Science
Edited by Aaron Finerman. (Proceedings of a Conference on Graduate, Academic, and Related Research Programs in Computing Science, held at the State University of New York at Stony Brook, June 1967. ACM Monograph Series.) Pp. xvi + 237. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1968.) 112s.

THE two main purposes of the conference reported in this book were to discuss the form of postgraduate courses in computing science and the position of computing science in the organizational structure of American universities. There were some seventy invited participants representing forty American universities and fifteen industrial and commercial organizations, and six people from Europe were invited, including Dr Wilkes and Professor Gill from England.

The first three mornings were devoted to nine invited papers, and the texts of these, together with the subsequent discussions, are reproduced in the report. There seems to have been considerable discussion on the use of the words "computer" or "computing" and on the correctness of the use of the word "science". There is an interesting two-page definition of computer science by Newall, Perlis and Simon.

Several of the speakers were concerned about the position of computing science in the university with particular reference to its relationship to mathematics and electrical engineering. The general feeling was that there should be a separate department but that many of the academic appointments should be joint ones with other departments, particularly mathematics and electrical engineering.

There is a considerable amount of useful information in the papers by Beckman on "Graduate Computer Science Programs in American Universities", Gotlieb on "How Many Computers per University ?" and Weiss on "Industry's View of Computing Science". In the discussion after Gotlieb's paper the need was stressed for separate computing facilities within a department of computing science.

An interesting point which emerged in discussion was related to hardware research. Professor Carr of the University of Pennsylvania said that the very small amount of research into computer hardware in American universities was not the choice of the universities, but resulted from the difficulty in financing such projects with government money in the face of very strong opposition from the computer manufacturers. He believed that many departments would be only too pleased to do hardware research if funds were available.

During the afternoons the conference divided into four concurrent workshops which reported back on the final day. The first reported on "The Master's Program in Computing Science", and reviewed the different topics which could be covered. Particular stress was placed on the difference between terminal MS degrees and MS degrees leading to study for the PhD. The second report was similar, but related to "The Doctoral Program in