

General Books

OLD THEORIES

An Essay on Phlogiston and the Constitution of Acids
Reproduction of 2nd edition, 1789. By R. Kirwan.
(Cass Library of Science Classics No. 9.) Pp. xxiii + 322.
(London: Frank Cass and Co., Ltd., 1968.) 90s.

THE short title of this book suggests that it is about a dead error. It is in fact as vivid a piece of living history as a chemist could wish to find. It is the second edition of 1789 which is reproduced. The first edition (1784) consisted only of a statement of a phlogistonist position sufficiently well thought of to get a French translation. This translation, elicited from the anti-phlogistonists many good criticisms which were published with it (1788). William Nicholson then prepared a new English edition including translations of the French comments with rebuttals by Kirwan. The 1789 version is thus a self-contained specimen of the many-sided discussion which gave the chemical revolution its intellectual tension.

Because of his regard for experimental skill, Kirwan tends to show too great a respect for tradition, so attributing to Stahl's theories merits due only to the German metallurgists. Lavoisier exhibits clearly a defect in his own theory of inflammability which hindered its ready acceptance, namely, his insistence that caloric and light were necessary participants in the chemical processes of combustion. Throughout the book can be seen, from examples like these, the interplay of old and new, with the balance of logic and experimental rigour by no means always on the side of the new.

The rescue of the oxygen theory from the confusion of caloric came eventually from the elucidation of the composition of acids, a problem which ran in double-harness with that of combustion, and which was to occupy chemists well into the next century. A modern, simplified exposition of the Lavoisier experiments on red calx of mercury seems to tolerate only one, a modern, explanation. But Kirwan's description of the solution of mercury in "nitrous" acid and the action of heat on the product, followed by Berthollet's good-tempered correction of his misconceptions, show how complex, particularly where acids were concerned, were the inter-related phenomena that all were trying to understand.

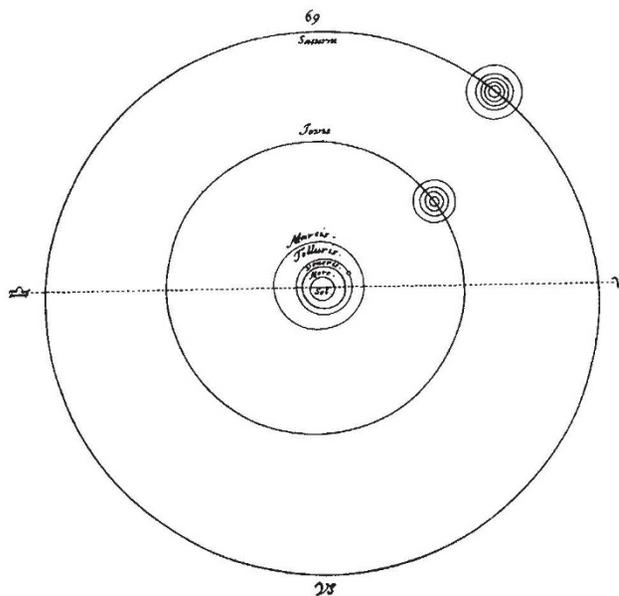
Some years later Kirwan adhered to the anti-phlogistonist school; it is to his own credit that, even in this book, where he sees merit in the French theory he draws attention to it. For example, in considering "dephlogisticated marine acid" (chlorine) he says: "the properties of this acid seemed to me to furnish strong proofs of the falsehood of the antiphlogistic theory; but they appear in quite a different light since the publication of the experiments of this excellent chymist, in so much that, I must own, they alone seem to me to offer any plausible ground for that hypothesis".

Nicholson's introduction has many good things: a criticism of Lavoisier's habit of "unwarrantable pretension to accuracy"; some notes on the sensitivity of balances and the degree of error likely in determination of specific gravities of gases. Among many wise words about scientific controversy we find "A desire of victory, or of distinction, frequently produces an obstinate adherence to the tenets we have maintained". Kirwan, at least, was above this.

The modern editor has provided a rudimentary index. The facsimile reproduction is excellent.

FRANK GREENAWAY

PLANETARY WORLDS



The Copernican Solar System, from *The Celestial Worlds Discovered* by Christian Huygens (Frank Cass; 45s.). This is an exact facsimile reproduction of the posthumous 1698 edition, with an index. The figure is "a Description of the Orbs the Planets move in, in that order that they are placed round the Sun, drawn as near as can be in their true Proportions, like what you have seen in my Clock at home".

ROYAL APOTHECARIES

The Royal Apothecaries

By Leslie G. Matthews. Pp. xiv + 191 + 15 plates. (London: The Wellcome Historical Medical Library, 1967.) 25s.

THE muse of medical history, presumably descended from Aesculapius, the god of medicine, and Clio, the muse of history, must be gratified, if not a little surprised, at the world-wide importance she has reached. Although always supported by certain scholarly members of the medical profession in the past, it must be admitted that they were few in number and for the most part elderly. Indeed, Sir Humphry Rolleston told me that when he published his first historical paper, he was warned by a candid friend that an interest in medical history was often regarded as a sign of approaching senility! Now all is altered; medical history and biography have come into their own. The modern pioneers, Sir D'Arcy Power, Sir William Osler, Charles Singer, Harvey Cushing, Sarton, John Fulton, W. W. Francis, Sigerist and others, men of renown and scholarship, have shown the value of medical history. There is now no lack of worshippers at its muse's shrine, and the influence of health and medicine in relation to the present and the future as well as to the past is realized and investigated by young scholars as well as by their seniors, by lay men and women in addition to "medicals".

Of the many valuable books in such a fruitful field of research that have appeared within the past decade Mr Matthews's book takes high place. He is a Fellow of the Society of Antiquaries and a member of the Livery of the Worshipful Society of Apothecaries.