A map of the world

C.A. Russell

The Cambridge Illustrated History of the World's Science.

By Colin A. Ronan.

Newnes Books/Cambridge University

Press: 1983. Pp.543. £12.95, \$29.95.

THIS bold enterprise, even if it is not quite as unusual as the publishers and author might like us to believe, is a remarkable compilation and outshines all its predecessors by its herculean attempt at comprehensiveness, in terms of space, time and theme. In 527 pages Ronan provides a commentary on the history of science from the magically inspired speculations of the ancient world to space science of the late twentieth century and from China to South America. It also includes 300 illustrations some of which have been rarely, if ever, produced in other recent books.

Quite inevitably in a work of such generality, one can spot errors of fact here and there (though comparatively few misprints). Samuel Wilberforce at the time of his confrontation with Huxley was Bishop of Oxford, not Winchester; Thomas Beddoes never occupied a Chair at Oxford; Davy's denial of the compound nature of chlorine rested upon other facts than electrolysis; Wöhler's synthesis of urea has been shown not to have the significance attributed to it; the mauve synthetic dye discovered by Perkin was not the same as the natural 'purple' of antiquity; the zero of Kelvin's absolute temperature scale was not the freezing point of water; Priestley is inaccurately described as a Presbyterian and so on. Were it only slips of this kind that called for comment the value of the book would not be seriously diminished. However it displays another tendency which might be deemed more important.

Partly on account of his desire to write engagingly for the layman, and doubtless also for reasons of space, the author frequently retails anecdotes in which fact and fiction are not always easily separable. He describes the exploits of Pythagoras, Archimedes and his bath, Galileo and the Tower of Pisa, Newton and his apple and much else in similar vein. When he cites Luther's alleged diatribe against Copernicus he gives no inkling of the scholarly doubts about the authenticity of the report on which it is based. His own dictum about Pliny: "the fabulous appears side by side with the prosaic" could at times be applied to his own narrative.

Recent historiography would also question some of the wider generalizations that are on offer. The 'timeliness' of Boyle's definition of an element is much to be doubted since no one did anything about it for over a century. There certainly was

doubt (and a great deal of it, especially in Germany) about the experimental evidence supporting Lavoisier's view of air. The role of science in the development of early steam power has been increasingly regarded with scepticism. And it is very doubtful if Kekulé could subscribe to a view of his own scientific strategy which presupposed a doctrine (valency) that he was himself later to discover! However it must also be stressed that there are many useful insights that are thoroughly up to date, most notable, perhaps, being Ronan's recognition of the inspiration due to animistic religion and the originality (as well as the conserving function) of medieval Arab science.

Perhaps the most remarkable feature of this book, and it is paradoxically both a virtue and a blemish, is its apparent freedom from ideological bias. Ronan really does seem to be trying to 'tell it like it is'. He ascribes the growth of science to neither the class war nor mystical intuition. He appears to have no stake in Puritanism, Islam, Zen Buddhism, or any of the other cults that have received much attention recently. Nor does he favour the 'heroic' view of history, and his participants emerge as far more ordinary men than many Victorians would have painted them. All this is a virtue. Yet, by playing it so straight down the line, the author leaves us with an uncomfortable sense of unreality.

The fact is that science did not just happen in a cultural vacuum, nor were all the 'scientists' (as they are often anachronistically called) operating in watertight compartments, their scientific and other interests having no effect on one another. To have any feeling of the

development of science we must know not only what happened but also why. For example, underlying the whole Darwinism debate were social and theological issues of immense importance and some complexity; but of these we get the merest hint (and, be it added, a very Victorian impression of a conflict that we now know to have been partly rigged at the time and largely misunderstood until quite recently). Again, Ronan writes of Newton's 'extraordinary theological interests' without apparently, any recognition of their immense relevance to all the science he ever did.

However there is an ideology behind the organization of the book, but it is not presented to us in those terms. Scientific progress is depicted throughout as something immensely desirable and probably inevitable. It is 'this glorious adventure of the human intellect'; despite reverses and setbacks, it is 'the long battle for the light'. In its positivist approach and 'Whiggish' flavour the book is reminiscent of a much earlier genre of historical writing.

Obviously this is not a book for the specialist. Reluctantly I conclude that it is not too reliable a guide for the novice who wishes to savour something of modern history of science. But for a general overview of how science emerged from its pre-history it will probably be most useful. If I earlier cited Ronan's words about Pliny and applied them to his own work, I should complete the quotation, for this is also appropriate: "The work is a magnificent compilation in spite of all its faults". □

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第六圖 證印丹還液金

An illustration from a book by Lung Mei Tzu, dated to the 12th century, uses symbolism derived from early Chinese physiological alchemy. It appears in the latest volume of Joseph Needham's *Science and Civilisation in China* (Volume 5 *Chemistry and Chemical Technology Part 5; Spagyric Discovery and Invention: Physiological Alchemy*), which will be reviewed in a forthcoming edition of *Nature*.