

Book Reviews

STEPHEN G. BRUSH, *The history of modern science: a guide to the second scientific revolution, 1800–1950*, Ames, Iowa State University Press, 1988, 8vo, pp. xv, 544, \$39.95.

It takes a bold man to publish the course he gives to his students; and that is what Stephen Brush has done in this book, which consists of lecture-summaries with reading lists. It is comparable with the Course Units the Open University publishes in Britain, but without the illustrations: it is a dauntingly serious work, and the students must derive much profit from their course. How far anybody else would want to use it is a moot point; there is no doubt that any teacher could derive some benefit and interest from it, but the summaries are written in the style of historical introductions in good scientific texts and are highly compressed; students would find them hard going unless they had heard the lectures too, and so will a general reader. The bibliographies, going up to about two years before the book came out, are useful.

The course includes a bit about Freud, whose science some might consider to be the phrenology of the twentieth century; but it comes to life in dealing with physics and astronomy. The medical sciences do not make an appearance; it is wise in giving a course to stick to what one knows, but this is a little drastic given the importance of physiology, for example, inside and outside medicine; even chemistry has only a walk-on part. The framework is that of Kuhn's paradigms, but actually closer to the way J. T. Merz ordered his great book on the science of the nineteenth century, by themes rather than disciplines; but Merz was more systematic and his coverage wider.

The problem with focusing on modern physics is that one drifts into general science rather than serious history; and although Brush asks the right questions at the end of lectures, his summaries are generally internalist rather than contextual. Only when dealing with American astronomy, a science in which the USA was a centre of excellence long before European refugees arrived in the 1930s, does Brush wrestle with the kind of questions that most historians of science now see as the most interesting ones. There is also surprisingly little about instruments and apparatus, though, of course, experiments and observations are discussed.

In the end, then, while the book is impressive, it has the disadvantages of being rather personal without the advantages; the selection of material is pleasantly quirky, but one does not get to know one's guide, or feel that pleasure is being taken in playing with words: and to call it "the" history of modern science is a trifle misleading, especially for medical historians.

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JAN SAPP, *Beyond the gene: cytoplasmic inheritance and the struggle for authority in genetics*, Monographs on the History and Philosophy of Biology, Oxford University Press, 1987, 8vo, pp. xvi, 266, £32.50.

When I was an undergraduate, we were given a slim volume entitled *Extrachromosomal inheritance* as one of our course books. It was hard to know why; even we knew that inheritance depended on genes and that genes were on chromosomes in the nucleus. By our definition, the title itself was a paradox. What could *extrachromosomal* inheritance be? As far as we could determine, it involved peculiar things like mitochondria and chloroplasts, and kappa of *Paramecium*. No, the real things were in the nucleus. It is the purpose of Jan Sapp's book to show how this state of affairs came about, how a climate of research developed such that it was possible for us to be so dismissive of the idea that there might be such a phenomenon as cytoplasmic inheritance.

Sapp has written useful and interesting accounts of biological research that has been ignored in other studies of genetics. He covers research in pre-World War II Germany and his descriptions of the work of Sonneborn in the United States and Ephrussi in France are particularly valuable. The problems and confusions that can arise when politicians adopt and adapt science for their own purposes are well illustrated by Sapp's account of the Lysenko period. Scientists at loggerheads over the importance or even the existence of cytoplasmic inheritance joined forces to fight a common foe when extracytoplasmic inheritance was used as evidence for Lamarckian inheritance.