look to the time when more direct evidence of the changes occurring at birth in the human cardiovascular system will be available.

The foregoing criticisms must not be allowed to detract from the value of this publication. It is full of information and is the most comprehensive and satisfying account in existence of the fœtal circulation and its neonatal changes. The work done by this team should command the admiration of all interested in the young mammal. The gaps in our knowledge are clearly enunciated and should act as a stimulus to embryologists, obstetricians and physiologists alike. The numerous illustrations are of high quality, the bibliography and index most useful. The authors, publishers and the Nuffield Institute for Medical Research alike deserve credit and thanks for producing so monumental a treatise in war-time.

D. V. DAVIES.

TRAVELS OF A BOTANIST

A Life of Travels

By C. S. Rafinesque. Being a verbatim and literatim reprint of the original and only edition (Philadelphia, 1836). Foreword by Elmer D. Merrill; Critical Index by Francis W. Pennell. (Chronica Botanica, Vol. 8, No. 2.) Pp. 291–360+plates 5–8. (Waltham, Mass.: Chronica Botanica Company; London: Wm. Dawson and Sons, Ltd., 1944.) 2.50 dollars.

RAFINESQUE was a peculiar character who, in the course of a vagrant life of fifty-seven years, worked according to himself as "a Botanist, Naturalist, Geologist, Geographer, Historian, Poet, Philosopher, Philologist, Economist and Philanthropist". But primarily he was a plant taxonomist, whose work, Dr. Merrill suggests in the foreword to this volume, has not received the attention that it deserves.

Rafinesque was born "at Galata, a suburb of Constantinople", in 1783, and died in Philadelphia in 1840. With the exception of a period of ten years in Sicily, most of his adult life was spent in America. He was apparently an indefatigable traveller, who made long laborious journeys "by nearly all the possible manners except by camels and in balloons". He was also an extremely zealous collector, so much so that of one episode he writes: "In wading through Green R. I narrowly escaped drowning, but collected many fine shells". In the intervals between the successive journeys he led a busy life writing books, maintaining an elaborate correspondence with many of the leading naturalists of his day, and earning his living. Unfortunately in this last undertaking he was not very successful. On one occasion some of his collections "remained for a while in store and under a mortgage", and repeatedly in the account of his travels he complains of the duplicity of those who would not recognize his just financial claims. At one time he earned his living as a teacher of Italian, drawing and botany; later he was appointed to a "Professorship of Botany and Natural history, with the addition of modern languages, with lodgings, boarding and casual emoluments"; and later still he became "a Pulmist, who attended only to the diseases of the lungs, as a Dentist attends only to the teeth". And again towards the end of his life he became "the Actuary" for an institution that was born of his own ingenuity, "The Divitial Institution and six per cent Savings Bank".

These details are given in "A Life of Travels", which was first published in Philadelphia in 1836, and which has now been reprinted in this edition. The passages in which they are recorded, however, are only occasional interpolations in an arid recital of places visited and routes followed. Throughout there is little description either of the observations or of the collections made during the several journeys. There are a few incidental comments, but these are not expressed with any particular originality. For example, of himself, Rafinesque writes: "I never was happier than when alone in the woods, or resting near a limpid stream or spring, I enjoyed without control the gifts of Flora, and the beauties of Nature". Nevertheless, the journeys that are described in such minute detail are of considerable interest in relation to the taxonomic work that was based on them, and to that extent the publication of the present volume is fully justified. Evidently this edition has been prepared with considerable care, but since itineraries are a prominent feature of the text, the value of any future edition would be considerably enhanced by the provision of illustrative maps, of which there is none in this.

R. BROWN.

PHOTOGRAPHY OF THE RECIPROCAL LATTICE

The Photography of the Reciprocal Lattice

By M. J. Buerger. (ASXRED Monograph No. 1, published by the American Society for X-Ray and Electron Diffraction.) Pp. ix+37. (Cambridge, Mass.: Murray Printing Co., 1944.) 1.50 dollars.

NOT many years ago an account of single-crystal X-ray diffraction methods would have been considered complete if it had referred only to the Laue, rotation and oscillation methods, with particular emphasis on the last. There might also have been some mention of moving-film methods, such as the Weissenberg. All this is now changed. Moving-film methods bid fair to displace other methods completely, even for the study of polycrystalline aggregates.

Prof. Buerger's book adds another chapter to the use of these methods; he has been able to devise apparatus whereby sections of the reciprocal lattice —the representation of the diffraction pattern of a crystal—can be obtained without distortion. In other words, the indices of the X-ray reflexions can be read off without the use of charts, with a consequent saving of time and an increase in reliability.

The book gives full details of the theory of the apparatus and contains several beautiful examples of photographs taken with its use. The author also gives a very fair estimate of the advantages and disadvantages compared with other methods. In particular, it will not give part of the reciprocal lattice near the origin, in common with all methods except the equi-inclination Weissenberg.

There are a few criticisms that can be made. The author claims that the method is inherently more accurate than most other moving-film methods, but he does not give a clear statement of the accuracy that can be expected from it. Also the title of the book is misleading; all methods that use characteristic radiation give a representation of the reciprocal lattice. These, however, are small points, and the American Society for X-Ray and Electron Diffraction is to be congratulated on the first of the monographs it has produced.

H. LIPSON.