The volume is largely in English, but the index is bilingual. The press work is excellent, and I found only a few typographical errors.

J. ALLEN HYNEK
Smithsonian Astrophysical Observatory, Cambridge, Massachusetts

Roman Construction in Italy from Tiberius through the Flavians. Marion Elizabeth Blake. Carnegie Institution of Washington, Washington, D.C., 1959. xvii + 195 pp. Illus. $9.

The present volume is the second part of a basic, three-volume work which will present in considerable detail the history and development of Roman building methods in Italy. The first volume (1947) takes us through the reign of Augustus; now this one guides us through the confusing history of building in the first century A.D.—a period in which builders seem to be striking out in all directions, but without arriving at any truly major discoveries, and only rarely contributing a great architectural monument.

The old saw would have it that Augustus "found Rome of brick and left it of marble." Just how wrong headed this notion is is amply illustrated by Marion Blake's book; for working with marble (except as a veneer) was never greatly interesting to the Romans, nor was their contribution to stone construction ever of major importance. The great Roman advances in building technique were in the use of brick and concrete, and their continued experiments with these combined media prepared the way for the great architectural masterpieces of Trajan and Hadrian, Diocletian and Constantine—masterpieces which remain to be dealt with in the final volume of the series.

The present volume, like its predecessor, is sumptuously published. The footnotes are set along the edges of the pages, opposite the passages to which they refer; there are five separate indexes; and the plates contain over 100 photographs, beautifully reproduced. Yet it is just in these points where cause for complaint can be found. Anyone likely to read this book will expect to find the footnotes at the bottom of the page, and the present method not only wastes paper when the footnotes are sparse, but, when they come thick and fast, there is really not enough room for them. This leaves the impression that footnote information is crowded back into the text, and confuses material which is already hard enough to read. As to the five indexes, I should much prefer them combined. Finally, it seems to me that for illustrating architecture (and thus building) *drawings* are far superior to photographs and should be used even though some photographs must be left out. Let us hope that in the final volume Miss Blake will append a generous portfolio of drawings to illustrate not only that volume but this entire work.

The text itself deserves only praise. The completed work will force us to reassess both the history of Roman architecture and its contribution to architecture in general. This work is fundamental for classicists and medievalists alike and is recommended to anyone interested in architecture and engineering.

J. H. YOUNG
Department of Classics, Johns Hopkins University

Elementary Astronomy. Otto Struve, Beverly Lynds, Helen Pillans. Oxford University Press, New York, 1959. viii + 396 pp. Illus. $7.

Otto Struve, one of our most distinguished and lucid astronomers, has produced an unusual, interesting, and very useful book. Struve was assisted by Beverly Lynds and Helen Pillans. Although the title is *Elementary Astronomy*, the preface as well as the text clearly indicates that this is not another general, descriptive, astronomical text. Instead the book stresses the physics involved in astronomy, especially dynamical and spectroscopic lines of evidence and analysis. It might have been titled "Elementary Astrophysics." This book will be received with pleasure by many instructors and serious students of astronomy and physics.

The student or general reader usually has a difficult time finding how astronomers proceed from their various types of observation to models of the interior of stars, or to general pictures of the structure and history of the galaxy. Of necessity most introductory texts, like a considerable number of popular books, are mainly descriptive. Books at the next level have generally consisted of specialized, and usually rather technical, discussions. For most readers the gap is too great to jump; but this volume will provide a useful bridge. The volume may also be of value to physics students who explore some of the interesting astronomical contexts in which physics is applied. Problems, but not references for further study, are provided at the end of each chapter.

Although the book jacket contends correctly that the volume is "written in readable, non-technical style, the text assumes no previous training in mathematics or physics; calculus and trigonometry have been omitted entirely," a reader who lacks a knowledge of introductory physics will proceed slowly in many sections. In many instances the discussion is more detailed and mathematical, as well as more modern, than that in the well-known *Astronomy* by Russell, Dugan, and Stewart.

The topics discussed range from coordinate systems and fundamental units, through planetary motions and physical conditions, to the sun and its structure, the origin of stellar radiation, the origin of the solar system, the arrangement and motion of stars in space, stellar spectra, clusters, nebulae, binaries, variable stars, galaxies, and relativity, and the book ends with a chapter on telescopes and their accessories. In every instance, as in the discussion of radio astronomical instruments and observations, emphasis is upon the physical principles used by astronomers in constructing their equipment and interpreting their observations.

The 110 halftone illustrations, all closely related to the text, are most attractive despite the use of nonglossy paper for the book. In addition, 181 diagrams and a four-color frontispiece clarify the discussion. Many of the illustrations are especially interesting because they deal with technical points not commonly discussed or illustrated in descriptive texts.

FLETCHER G. WATSON
Harvard University

On the Pectoral Fin and Shoulder Girdle of the Arthrodires. Erik Stensiö. *Kungliga Svenska Vetenskapsakademiens Handlingar*, vol. 8, No. 1. Almquist and Wiksell, Stockholm, Sweden, 1959. 229 pp. + plates. Kr. 114.

This is another of the important and beautifully illustrated works by a man who has greatly influenced the study of fossil fishes over the past 3½ decades. As the latest in a series of recent studies on the anatomy and classification of the