

**CAMBRIDGE SCHOOL AND
COLLEGE TEXT BOOKS: AN
INTRODUCTION TO PLANE
ASTRONOMY FOR THE USE OF
COLLEGES AND SCHOOLS**

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Cambridge School and College Text Books: An Introduction to Plane Astronomy for the Use of
Colleges and Schools by Philip Thomas Main

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PHILIP THOMAS MAIN

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*CAMBRIDGE SCHOOL AND COLLEGE
TEXT BOOKS.*

AN INTRODUCTION
TO
PLANE ASTRONOMY

FOR THE USE OF COLLEGES AND SCHOOLS.

BY

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PREFACE TO THE FIRST EDITION.

In the present Treatise my object has been to explain as concisely as possible the principles of Plane Astronomy, so as to enable a student, who wishes to enter into either the practical work or the Mathematics of the subject, to do so with a clear knowledge of the connexion between the Astronomical observations and the results to which they lead.

In the few places where I have employed Mathematics to a slight extent, I have done so with a view, not of shewing what the actual calculations are, but of explaining in as simple a way as possible the kind of connexion which exists between the observations and their Mathematical application.

In dividing the subject into chapters, I have followed the arrangement in the work on *Practical and Spherical Astronomy* by my father, the Rev. R. Main. In preparing the Treatise I have examined all the Modern Works on the subject, and in some cases I have quoted from them; the quotations will be found within inverted commas. I have also used, by permission, two or three diagrams from Dean Goodwin's *Course of Mathematics*.

It is hoped that this treatise will answer the purpose of a text-book for that part of the subject which is required in the first three days of the Examination for Mathematical Honours.

Several of my friends have from time to time assisted me with their advice, for which I desire to tender them my most sincere thanks; I am also very greatly indebted to Mr Freeman and Mr Sharpe, both of St John's College, for the care with which they have examined the proof-sheets, and gladly take this opportunity of expressing my obligations to them for their assistance.

P. T. MAIN.

ST JOHN'S COLLEGE,
November 30, 1865.

PREFACE TO THE SECOND EDITION.

IN order to give a wider circulation to this work, the Second Edition has been included in the Cambridge School and College Text Books, at a greatly reduced price. Several fresh articles have been added where they seemed to be required, and the work has been throughout carefully revised.

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ASTRONOMY.

CHAPTER I.

DEFINITIONS AND FIRST PRINCIPLES.

1. *Plane Astronomy; its object.*

ASTRONOMY treats of the motions of the heavenly bodies. All these motions are the results of the Law of Gravitation; and their calculation from that law is the office of Physical Astronomy.

In the present work we treat of the motions of the heavenly bodies as they appear to a spectator on the Earth's surface, of the manner of observing accurately these motions, and of the phenomena to which they give rise. This part of the science is called Plane or Practical Astronomy.

2. *The celestial sphere.*

The first impression which a sight of the heavens on a fine night conveys to the spectator is that he is situated at the centre of a vast hemispherical vault or dome, studded with luminous bodies. He has in fact no means of forming an opinion as to the relative distances from him of the different bodies: he consequently imagines them all to be at the same distance, and to be situated on a spherical surface with himself at the centre: in reality these bodies are at various distances, the nearest of them, the Moon, being about 240,000 miles off, and the greater part of them at distances utterly beyond our powers of measurement.