



Preface

The small refracting telescope with its simple direct design and construction and permanently aligned optics is the time tested standard for personal use. Easily portable, it can be taken out of the house and set up at a moment's notice. Or, it can be packed conveniently into a small car for traveling to a dark observing site. With moderate care and minimal maintenance, the telescope and mount can last for generations.

These instruments provide sharp, crisp high-contrast images of the Moon and planets. They are less susceptible to the effects of unstable air than larger ones, and because of their low maintenance and durability they are ideal for the parent educator or lifelong learner. Until recently, however, the high cost of small telescopes of sufficient quality for serious astronomical use has limited their accessibility.

During the past decade, innovations in optical design and manufacture have lowered cost and improved quality. Current developments in lens design make it possible to produce affordable refracting telescopes with shorter tube lengths and greater versatility. The once very costly 90-mm Maksutov-Cassegrain, with its optimum combination of effective optics and portability, now sells for a modest price.

I have often seen small instruments referred to as “grab and go” or “quick look,” not worthy of consideration for serious observing. I maintain they can be much more. Despite their limits in types of observation, 80-mm refractors and 90-mm Maksutovs have sufficient aperture and magnifying power to provide a lifetime of observing pleasure. They are ideal for lunar occultation measurements, tracking the solar activity cycle, observing variable stars and measuring binary

x Preface

stars. Although all the activities described here are equally applicable to larger instruments, none of them require an aperture larger than 80 mm.

Through the use of common digital cameras, the limiting stellar magnitude and image scale of small telescopes can be increased dramatically, thus providing results one normally expects from larger instruments. Much of this book applies that principle to making interesting and useful astronomical observations. I have taken novel approaches to extending the use of small instruments for quantitative observations by applying unique methods for the analysis of digital camera photographs.

My intent is to demonstrate that useful and significant observations can be made with modest, relatively low cost equipment. Some of the activities described provide the necessary tools for making valuable contributions to various international astronomical data files. Others are of primarily educational value for either the self-learner or the science educator. This material should be of interest to both the beginning and the experienced observer. The emphasis is on what you can do with a small telescope rather than only on what you can see.

Acknowledgement

I am deeply indebted to Madalon Amenta for her time and skill in editing the manuscript.

*Michael K. Gainer
June 2006*

Real Astronomy with Small Telescopes
Step-by-Step Activities for Discovery

Gainer, M.

2007, XVI, 148 p. 90 illus., Softcover

ISBN: 978-1-84628-478-6