

Introduction to Amateur Astronomy

An Outline for Discussing Astronomy

Getting started in astronomy

Get started by visiting an astronomy club
Go to a star party, bring your scope
Astronomy is a highly technical science, but. . .
Amateur focus is learning: the night sky,
what to observe, how to use telescopes
Small scope view not the same as a Hubble
photo, but beautiful nonetheless

Learning the night sky

Sky observed from prehistory: e.g. location
finding, planting crops, religious feelings
Greeks named brightest stars; gave fanciful
names to star group: constellations
Roman names for planets still in use today
Arabs named many stars during Dark Ages
Explorers and scientists named Southern
constellations
In 1930 International Astronomical Union
drew boundaries for 88 constellations
First step: learn bright stars and constellations
Resources: star charts, planisphere, moon
map, beginner books (Skymaps.com),
Sky and Telescope, Astronomy
Star brightness called “magnitude”
Earth axis is tilted, causes seasons and
determines star paths across sky
Sky coordinates: latitude & longitude
become declination & right ascension
Planets follow the ecliptic, home of the
Zodiac constellations
Eventually many will want to buy a telescope
Resource Guide for Telescope Buyers

Objects for telescopes

Solar System
Moon, Sun, planets & moons, comets,
asteroids, meteors & meteor showers
Eclipses, conjunctions, occultations, transits
Special stars: multiple stars, variable stars
Deep sky objects (beyond the solar system)
Milky Way star fields
Open and globular clusters
Emission, reflection, dark nebulae
Planetary nebulae

Supernova remnants
Galaxies

Catalogs of deep sky objects

Charles Messier “Ferret of Comets”
110 objects, late 1700s & early 1800s
New General Catalog, 7840 objects listed in
1880 by John Dreyer from observations by
William & John Herschel
Index Catalog, 5326 additional objects
Many specialized catalogs
Star atlas needed to find most DSOs

Observing equipment

Refracting telescope invented circa 1600 by
Dutch spectacle maker Hans Lippershey
Galileo was first to turn scope on sky (1609)
Sir Isaac Newton invented reflector (1669)
Instrument types
Binoculars
Refractor (lenses)
Newtonian reflector (mirror)
Catadioptric (lens & mirror)
Solar scope & filters
Mount types
Altitude-Azimuth (Alt-Az)
Dobsonian (Newtonian reflectors)
German equatorial
Fork-mount equatorial (Cassegrains)
Clock drive and GO TO mounts
Accessories
Eyepieces, filters, optical accessories
Star charts & atlases, moon map
Observing aids & comforts
Cameras & photography accessories
Computers & planetarium programs

Light pollution (www.darksky.org)

Turn off lights at night or use motion sensors
Use shielded light fixtures
Use low wattage bulbs