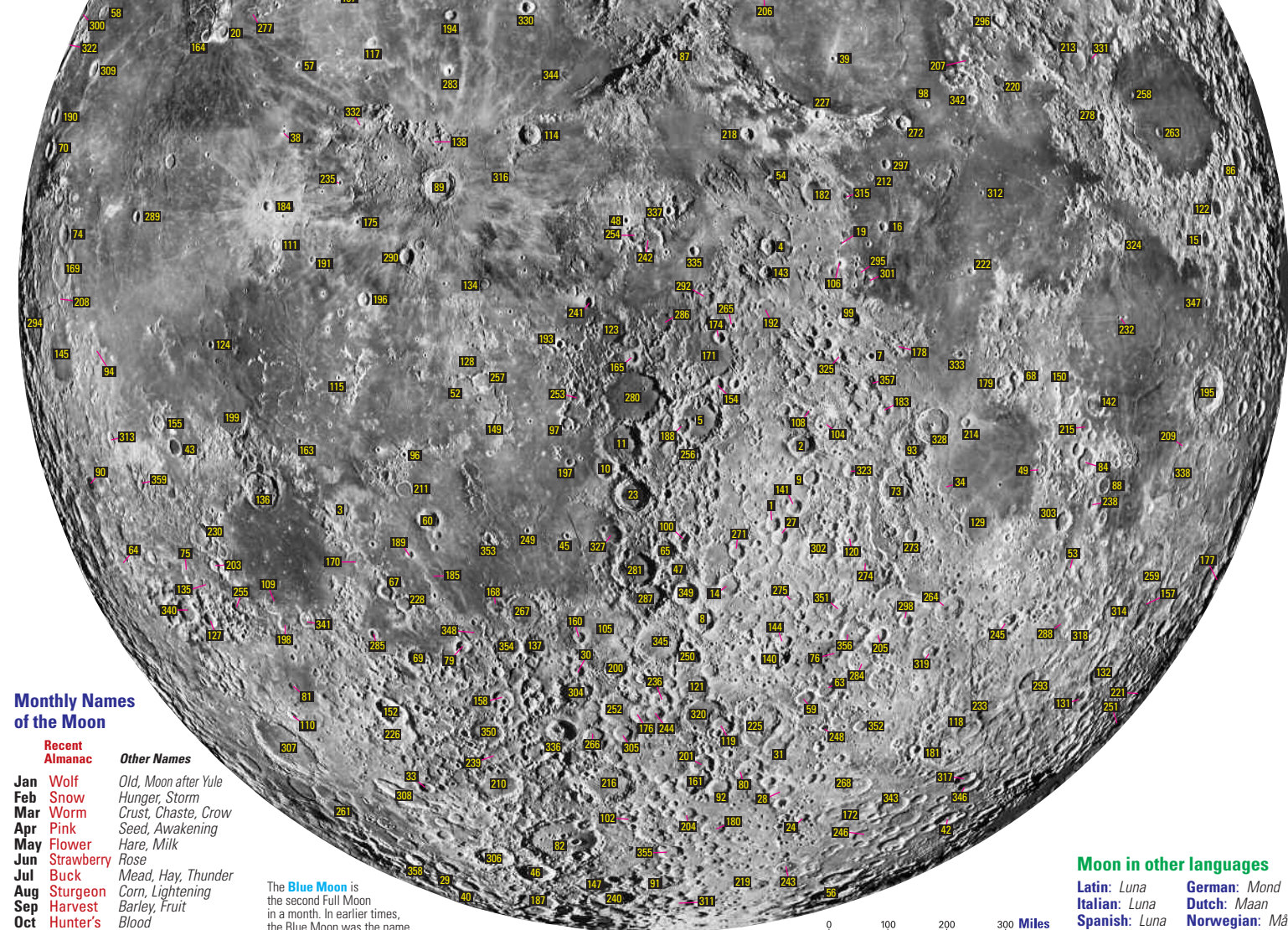


## Greek Mythology

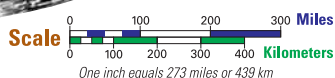
Selene is the Moon and the goddess of the Moon, daughter of the titans Hyperion and Theia. Her sister Eos is the goddess of dawn and her brother Helios is the Sun. Selene is often pictured with a crescent Moon on her head. Selenology, the modern-day term used for the study of the Moon is derived from Selene.



## Monthly Names of the Moon

Month	Recent Almanac	Other Names
Jan	Wolf	Old, Moon after Yule
Feb	Snow	Hunger, Storm
Mar	Worm	Crust, Chaste, Crow
Apr	Pink	Seed, Awakening
May	Flower	Hare, Milk
Jun	Strawberry	Rose
Jul	Buck	Mead, Hay, Thunder
Aug	Sturgeon	Corn, Lightening
Sep	Harvest	Barley, Fruit
Oct	Hunter's	Blood
Nov	Beaver	Snow, Frosty
Dec	Cold	Moon before Yule

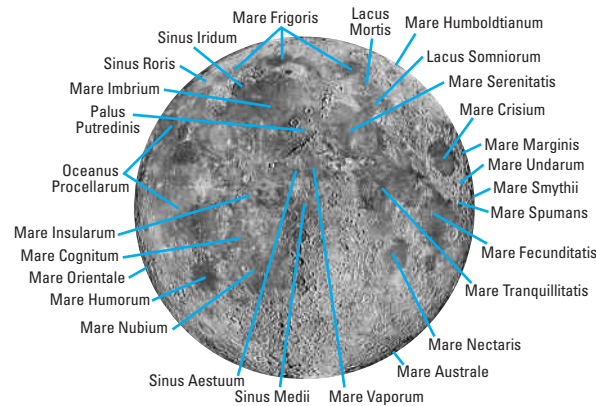
The **Blue Moon** is the second Full Moon in a month. In earlier times, the Blue Moon was the name given to the third Full Moon during a season that had four Full Moons.



## Moon in other languages

<b>Latin:</b> Luna	<b>German:</b> Mond
<b>Italian:</b> Luna	<b>Dutch:</b> Maan
<b>Spanish:</b> Luna	<b>Norwegian:</b> Måne
<b>French:</b> Lune	<b>Swedish:</b> Måne
<b>Portuguese:</b> Lua	<b>Finnish:</b> Kuu

## Maria & Related Features



## Observing the Moon

The best times to observe the Moon through a telescope is when the terminator is present, that is, the "line" separating the lighted side from the dark side, or the day side from the night side. Craters appear their best (sharpest) when near the terminator because the contrast from shadows makes them more pronounced. Magnifications from 40x to 250x are recommended.

The Moon is very bright and can fatigue your eye when viewing it through a telescope. Screw two polarizing filters onto the bottom of your eyepiece (most eyepieces have threads) to reduce the light intensity. These can be rotated to vary the amount of light that gets through.

The Moon is disappointing to observe around Full Moon. During this time, the entire surface, along with most features, gets "washed out." However, at this time,

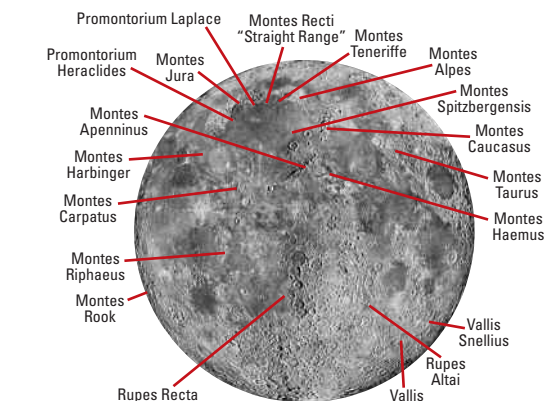
the rays of craters are the most pronounced.

Around New Moon, the Moon is a crescent and the dark side is slightly lit by reflected light from Earth called Earthshine. Features on the dark side are pretty to observe in a telescope.

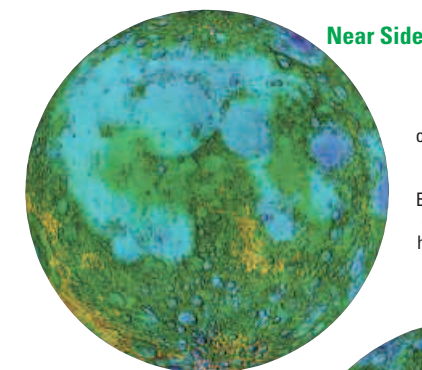
The Moon moves eastward in its orbit around Earth. On average, this results in the Moon rising 50 minutes later each day but this varies from 30 to 70 minutes. In one hour, the Moon moves eastward slightly more than its diameter. The Moon's path in the sky always stays close to the Ecliptic (and the zodiac), the path that the Sun makes through the stars.

Over a month's time, the Moon's distance from the Earth varies by 31,250 miles because its orbit is elliptical. This causes the size of the Moon in the sky to vary by about 14%.

## Mountains & Associated Features

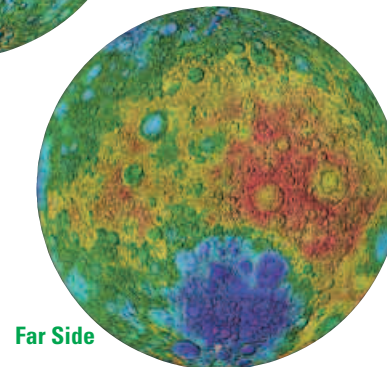


## Lunar Surface Elevations



Near Side

Color-coded elevation maps of the Moon. The difference in elevation from the lowest to the highest point is 11 miles. Both of these points are found on the Far Side. The Far Side has very few maria compared to the Near Side.



Far Side

## Facts & Features

- Diameter:** 2,160 miles which is 27.3% of Earth's equatorial diameter of 7,926 miles
- Volume:** 2.03% of Earth's volume; 49 Moons would fit inside Earth
- Mass:** 1.62 x 10<sup>23</sup> pounds; 1.23% of Earth's mass
- Surface Area:** 7.4% of Earth's surface area
- Average Density:** 3.34 gm/cm<sup>3</sup> (water is 1.00 gm/cm<sup>3</sup>). Earth's density is 5.52 gm/cm<sup>3</sup>
- Gravity:** 0.165 times the gravity of Earth
- Escape Velocity:** 1.5 miles/sec; 5,369 miles/hour
- Distances from Earth** (measured from the centers of both bodies): **Average:** 238,856 miles; 1.3 light-seconds. **Closest:** 221,457 miles. **Farthest:** 252,711 miles.
- Eccentricity of Orbit:** 0.055; The major axis is 16% longer than the minor axis.
- Sidereal Revolution Period** (One Complete Orbit): 27.322 days
- Synodic Revolution** (New Moon to New Moon Period): 29 days, 12 hours, 44 minutes, 3 seconds

- Average Orbital Velocity:** 2,287 miles/hr
- Degrees of Movement in Sky & Arc Degree Size:** 0.51° per hour; 12.2° per day. In the sky, the Moon extends an arc degree diameter that varies from 0.498° to 0.569°.
- Inclination of Orbit to Earth's Orbit:** 5.1°
- Rotation Period of Nodes:** 18.61 years. The nodes represent the "line" created by the "intersection" of the Moon's orbit to Earth's. Its rotation plays a major role in the frequency of eclipses.

**Rotation Period on Axis:** The rotational period is the same as the Synodic Revolution, thus the same side of the Moon always faces Earth. The Near Side of the Moon has become "locked" toward Earth because it is heavier than the Far Side.

- Inclination of Axis:** 6.7° to its orbital plane
- Albedo:** reflects 11% of sunlight
- Magnitude at Full Moon:** -12.6
- Temperature Range:** -300° F to 266° F. Poles remain at a constant -140° F. The temperature one yard below the surface remains at a constant -31° F.

**Surface Elevation Range:** 11 miles (lowest to highest points). Both points are located on the far side. The coordinates for the lowest and highest points are not known precisely but one set is as follows: lowest [70° S, 171° E], highest [3.4° N, 160° E].

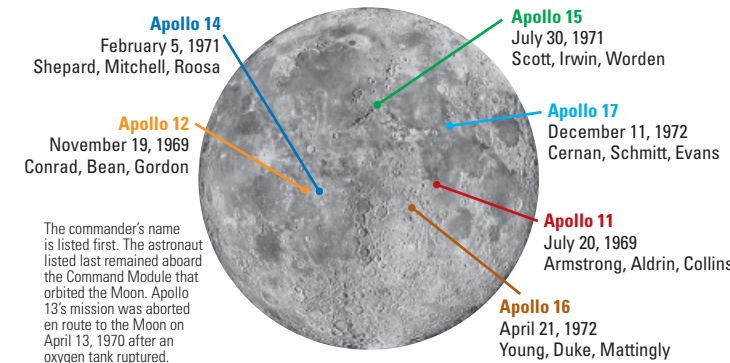
**Surface Soil (Regolith) Composition:** Oxygen 42%, Silicon 21%, Iron 13%, Calcium 8%, Aluminum 7%, Magnesium 6% and Other 3%. The Moon's surface has slightly more Iron, Calcium and Magnesium than on Earth's surface.

**Age & Origin:** 4.5 billion years old. The most accepted theory of the Moon's origin is that it formed when a Mars-sized object colliding with Earth "shortly" after the formation of our Solar System 4.6 billion years ago. This catastrophic impact caused the Mars-sized object, along with part of Earth's crust and mantle, to break up into pieces that formed a ring orbiting Earth and shortly afterward coalesced to form the Moon. Crustal and mantle materials from the Earth have been identified in the Moon rocks retrieved from the Apollo landings, lending support to this theory.

## Terminology

**Craters.** Huge bowl-like depressions. Most of the craters were formed from asteroid or cometary impact that ended about 3½ billion years ago. **Maria & Terrae.** The dark and light surface coloration visible to the naked eye. The darker and smoother plains are known as **maria** (the "seas") and the brighter cratered highlands are called **terrae** — terms coined by Galileo. The **terrae** have the highest concentration of craters and are older than the maria. The maria represent 16% of the surface and are the result of impacts from large asteroids or comets creating fractures to the once molten interior, which released dark, iron-rich, basalt lava, that flowed upward and outward to create the great plains. They average 500 to 600 feet thick. There are few maria on the far side of the Moon. **Rilles, Faults & Wrinkles.** Lines in the maria, up to hundreds of miles in length. They can be seen in telescopes and are the result of cracks, fractures or collapses in the maria. **Regolith.** A fine grained "soil" that covers the surface of the Moon created from the bombardment of the surface by sand-size micrometeorites. Its depth varies from 6½ to 26 feet in the maria, and to a possible 49 feet in the highlands. **Rays.** Bright streaks that radiate from some craters. They represent lighter, reflective material, ejected during the formation of craters and are most pronounced around Full Moon. The crater Tycho has the longest rays, spanning one-quarter of the globe. Rayed craters may be less than one billion years old because the rays of older craters have been eroded by micrometeorites. **Terminator.** The border or "line" separating the lighted side (day side) from the dark side (night side). The terminator is absent during Full Moon. Craters appear more pronounced (at their sharpest) when near the terminator.

## Six Apollo Lunar Landings, 1969 to 1972



The commander's name is listed first. The astronaut listed last remained aboard the Command Module that orbited the Moon. Apollo 13's mission was aborted en route to the Moon on April 13, 1970 after an oxygen tank ruptured.

Six, 364-foot tall Saturn V rockets (A) launched three astronauts at a time on a 4½ day journey to the Moon. The Command & Service Modules (B) orbited the Moon with one astronaut aboard while two descended to the surface in the Lunar Module (C), with



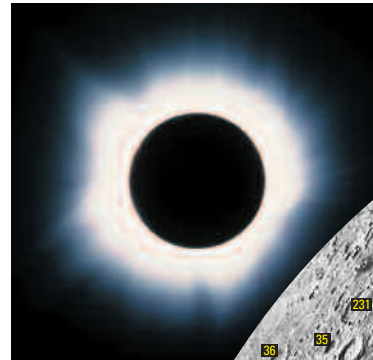
stays that lasted 22 to 75 hours. The Lunar Roving Vehicle (D) was used on missions 15, 16 & 17 and traveled as far as 4.7 miles from the landing site. Only the Command Modules (E) returned to Earth, splashing into an ocean, slowed by three parachutes.

# Index of Numbered Craters

Index Number • Crater Name • (Quadrant) • Diameter

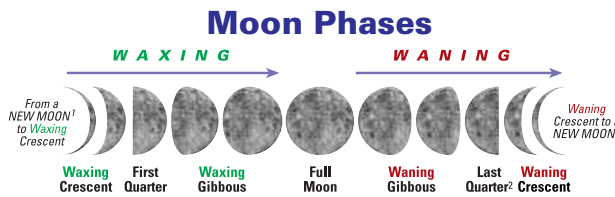
- |                               |                              |                               |
|-------------------------------|------------------------------|-------------------------------|
| 1 Abenezra (IV) 26 mi         | 82 Clavius (III) 140 mi      | 163 Herigonius (III) 9 mi     |
| 2 Abulfeda (IV) 39 mi         | 83 Cleomedes (II) 78 mi      | 164 Herodotus (II) 22 mi      |
| 3 Agatharchides (III) 30 mi   | 84 Colombo (IV) 47 mi        | 165 Herschel (III) 26 mi      |
| 4 Agrippa (I) 29 mi           | 85 la Condamine (III) 23 mi  | 166 C. Herschel (II) 8 mi     |
| 5 Albategnius (IV) 85 mi      | 86 Condorcet (I) 46 mi       | 167 J. Herschel (III) 97 mi   |
| 6 Alexander (II) 51 mi        | 87 Conon (II) 14 mi          | 168 Hesiodus (III) 27 mi      |
| 7 Alfraganus (IV) 13 mi       | 88 Cook (IV) 29 mi           | 169 Hevelius (III) 66 mi      |
| 8 Aliacensis (IV) 50 mi       | 89 Copernicus (III) 58 mi    | 170 Hippalus (III) 36 mi      |
| 9 Almanon (IV) 30 mi          | 90 Crüger (III) 29 mi        | 171 Hipparchus (IV) 93 mi     |
| 10 Alpetragius (III) 25 mi    | 91 Curtius (III)(IV) 59 mi   | 172 Hommel (IV) 78 mi         |
| 11 Alphonsus (III) 74 mi      | 92 Cuvier (IV) 47 mi         | 173 Horrebrow (II) 15 mi      |
| 12 Anaxagoras (II) 32 mi      | 93 Cyrillus (IV) 61 mi       | 174 Horrocks (IV) 19 mi       |
| 13 Anaximenes (II) 50 mi      | 94 Damoiseau (III) 23 mi     | 175 Hortensius (II) 9 mi      |
| 14 Apianus (IV) 39 mi         | 95 Daniel (I) 19x14 mi       | 176 Huggins (III) 40 mi       |
| 15 Apollonius (I) 33 mi       | 96 Darney (III) 9 mi         | 177 Humboldt (IV) 129 mi      |
| 16 Arago (II) 16 mi           | 97 Davy (III) 22 mi          | 178 Hypatia (IV) 26x17 mi     |
| 17 Archimedes (III) 52 mi     | 98 Dawes (II) 11 mi          | 179 Isidorus (IV) 26 mi       |
| 18 Archytas (II) 20 mi        | 99 Delambre (IV) 32 mi       | 180 Jacobi (IV) 42 mi         |
| 19 Ariadaeus (I) 7 mi         | 100 Delaunay (IV) 29 mi      | 181 Janssen (IV) 118 mi       |
| 20 Aristarchus (II) 25 mi     | 101 Delisle (II) 16 mi       | 182 Julius Caesar (II) 56 mi  |
| 21 Aristillus (II)(III) 34 mi | 102 Deluc (III) 29 mi        | 183 Kant (IV) 20 mi           |
| 22 Aristoteles (I) 54 mi      | 103 Democritus (I) 24 mi     | 184 Kepler (II) 20 mi         |
| 23 Arzachel (III) 60 mi       | 104 Descartes (IV) 30 mi     | 185 Kies (III) 27 mi          |
| 24 Asclepi (IV) 27 mi         | 105 Deslandres (III) 145 mi  | 186 Kirch (III) 7 mi          |
| 25 Atlas (I) 54 mi            | 106 Dionysius (II) 11 mi     | 187 Klaproth (III) 74 mi      |
| 26 Autolycus (I) 24 mi        | 107 Diophantus (III) 12 mi   | 188 Klein (IV) 27 mi          |
| 27 Azophi (IV) 30 mi          | 108 Dollond (IV) 7 mi        | 189 König (III) 14 mi         |
| 28 Baco (IV) 44 mi            | 109 Doppelmayr (III) 40 mi   | 190 Krafft (II) 32 mi         |
| 29 Bailly (III) 186 mi        | 110 Dreybel (III) 19 mi      | 191 Kunovsky (III) 11 mi      |
| 30 Ball (III) 26 mi           | 111 Encke (II) 18 mi         | 192 Lade (IV) 35 mi           |
| 31 Barocius (IV) 51 mi        | 112 Endymion (I) 78 mi       | 193 Lalande (III) 15 mi       |
| 32 Barrow (II) 58 mi          | 113 Epigenes (II) 34 mi      | 194 Lambert (II) 19 mi        |
| 33 Bayer (III) 29 mi          | 114 Eratosthenes (II) 36 mi  | 195 Langrenus (IV) 82 mi      |
| 34 Beaumont (IV) 33 mi        | 115 Euclides (III) 8 mi      | 196 Lansberg (II)(III) 24 mi  |
| 35 Bernoulli (I) 29 mi        | 116 Eudoxus (II) 42 mi       | 197 Lassell (III) 14 mi       |
| 36 Berossus (I) 46 mi         | 117 Euler (II) 17 mi         | 198 Lee (III) 26 mi           |
| 37 Berzelius (II) 32 mi       | 118 Fabricius (IV) 49 mi     | 199 Letronne (III) 74 mi      |
| 38 Bessarion (II) 6 mi        | 119 Faraday (IV) 44 mi       | 200 Lexell (III) 39 mi        |
| 39 Bessel (II) 10 mi          | 120 Fermat (IV) 24 mi        | 201 Licetus (IV) 47 mi        |
| 40 Bettinus (III) 44 mi       | 121 Fernelius (IV) 40 mi     | 202 Lichtenberg (II) 12 mi    |
| 41 Bianchini (III) 24 mi      | 122 Firmicus (II) 35 mi      | 203 Liebig (III) 23 mi        |
| 42 Biela (IV) 47 mi           | 123 Flammarion (III) 47 mi   | 204 Lilius (IV) 38 mi         |
| 43 Billy (III) 29 mi          | 124 Flamsteed (III) 13 mi    | 205 Lindenau (III) 33 mi      |
| 44 Birmingham (II) 92 mi      | 125 Fontenelle (II) 24 mi    | 206 Linné (I) 1.5 mi          |
| 45 Birt (III) 11 mi           | 126 Foucault (II) 14 mi      | 207 Littrow (I) 19 mi         |
| 46 Blancanus (III) 65 mi      | 127 Fourier (III) 32 mi      | 208 Lohrmann (II)(III) 19 mi  |
| 47 Blanchinus (IV) 36x42 mi   | 128 Fra Mauro (III) 59 mi    | 209 Lohse (IV) 26 mi          |
| 48 Bode (II) 11 mi            | 129 Fracastorius (IV) 77 mi  | 210 Longomontanus (III) 90 mi |
| 49 Bohnenberger (IV) 21 mi    | 130 Franklin (II) 35 mi      | 211 Lubiniezy (III) 27 mi     |
| 50 G. Bond (I) 12 mi          | 131 Fraunhofer (IV) 35 mi    | 212 Maclear (II) 12 mi        |
| 51 W. Bond (II) 98 mi         | 132 Furnerius (IV) 78 mi     | 213 Macrobios (II) 40 mi      |
| 52 Bonpland (III) 37 mi       | 133 Galle (II) 13 mi         | 214 Mädler (IV) 17 mi         |
| 53 Borda (IV) 27 mi           | 134 Gambart (II) 16 mi       | 215 Magelhaens (IV) 26 mi     |
| 54 Boscovich (II) 29 mi       | 135 de Gasparis (III) 19 mi  | 216 Maginus (III) 101 mi      |
| 55 Bouguer (II) 14 mi         | 136 Gassendi (III) 68 mi     | 217 Mairan (II) 25 mi         |
| 56 Boussingault (IV) 81 mi    | 137 Gaucicus (III) 49 mi     | 218 Manilius (II) 24 mi       |
| 57 Brayley (II) 9 mi          | 138 Gay-Lussac (II) 16 mi    | 219 Manzinus (IV) 61 mi       |
| 58 Briggs (II) 23 mi          | 139 Geber (IV) 28 mi         | 220 Maraldi (II) 25 mi        |
| 59 Buch (IV) 34 mi            | 140 Geminus (II) 53 mi       | 221 Marinus (IV) 36 mi        |
| 60 Bullialdus (III) 38 mi     | 141 Gemma Frisius (IV) 55 mi | 222 Maskelyne (II) 15 mi      |
| 61 Burckhardt (II) 35 mi      | 142 Goclenius (IV) 34x45 mi  | 223 Mason (I) 27x21 mi        |
| 62 Bürg (II) 25 mi            | 143 Godin (II) 22 mi         | 224 Maupertuis (II) 29 mi     |
| 63 Büsching (IV) 32 mi        | 144 Goodacre (IV) 29 mi      | 225 Maurolycus (IV) 71 mi     |
| 64 Byrgius (III) 54 mi        | 145 Grimaldi (III) 143 mi    | 226 Mee (III) 82 mi           |
| 65 la Caille (IV) 42 mi       | 146 Grove (I) 17 mi          | 227 Menelaus (I) 17 mi        |
| 66 Calippus (II) 21 mi        | 147 Gruemberger (III) 58 mi  | 228 Mercator (III) 29 mi      |
| 67 Campanus (III) 30 mi       | 148 Gruithuisen (II) 10 mi   | 229 Mercurius (II) 42 mi      |
| 68 Capella (IV) 30 mi         | 149 Guericke (III) 36 mi     | 230 Mersenius (III) 52 mi     |
| 69 Capuanus (III) 37 mi       | 150 Gutenberg (IV) 46 mi     | 231 Messala (I) 77 mi         |
| 70 Cardanus (III) 31 mi       | 151 Hahn (I) 52 mi           | 232 Messier (IV) 8x7 mi       |
| 71 Carpenter (II) 37 mi       | 152 Hainzel (III) 44 mi      | 233 Metius (IV) 55 mi         |
| 72 Cassini (I) 35 mi          | 153 Hall (I) 24 mi           | 234 Meton (I) 76 mi           |
| 73 Catharina (IV) 62 mi       | 154 Halley (IV) 22 mi        | 235 Milichius (II) 8 mi       |
| 74 Cavalerius (II) 36 mi      | 155 Hansteen (III) 28 mi     | 236 Miller (III)(IV) 47 mi    |
| 75 Cavendish (III) 35 mi      | 156 Harpalus (II) 24 mi      | 237 Mitchell (I) 19 mi        |
| 76 Celsius (IV) 22 mi         | 157 Hase (IV) 52 mi          | 238 Monge (IV) 23 mi          |
| 77 Cepheus (II) 25 mi         | 158 Heinsius (III) 40 mi     | 239 Montanari (III) 48 mi     |
| 78 Chacornac (II) 32 mi       | 159 Helicon (II) 16 mi       | 240 Moretus (III) 71 mi       |
| 79 Cichus (III) 26 mi         | 160 Hell (III) 21 mi         | 241 Mösting (III) 16 mi       |
| 80 Clairaut (IV) 47 mi        | 161 Heraclitus (IV) 56 mi    | 242 Murchison (II)(III) 36 mi |
| 81 Clausius (III) 16 mi       | 162 Hercules (I) 43          | 243 Mutus (IV) 49 mi          |

- |                                      |                               |
|--------------------------------------|-------------------------------|
| 244 Nasireddin (III)(IV) 32 mi       | 302 Sacrobosco (IV) 61 mi     |
| 245 Neander (IV) 31 mi               | 303 Santbech (IV) 40 mi       |
| 246 Nearch (IV) 47 mi                | 304 Sasserides (III) 56 mi    |
| 247 Newcomb (I) 24 mi                | 305 Saussure (III) 34 mi      |
| 248 Nicolai (IV) 26 mi               | 306 Scheiner (III) 68 mi      |
| 249 Nicollet (III) 9 mi              | 307 Schickard (III) 141 mi    |
| 250 Nonius (III) 44 mi               | 308 Schiller (III) 111x44 mi  |
| 251 Oken (IV) 45 mi                  | 309 Seleucus (II) 27 mi       |
| 252 Orontius (III) 76 mi             | 310 Sharp (II) 25 mi          |
| 253 Prälis (III) 21 mi               | 311 Simpelius (IV) 44 mi      |
| 254 Pallas (II) 31 mi                | 312 Sinas (I) 8 mi            |
| 255 Palmieri (III) 26 mi             | 313 Sirsalis (III) 26 mi      |
| 256 Parrot (IV) 44 mi                | 314 Snellius (IV) 52 mi       |
| 257 Parry (III) 30 mi                | 315 Sosigenes (I) 17 mi       |
| 258 Peirce (I) 12 mi                 | 316 Stadius (II) 43 mi        |
| 259 Petavius (IV) 110 mi             | 317 Steinheil (IV) 42 mi      |
| 260 Philolaus (II) 44 mi             | 318 Stevius (IV) 47 mi        |
| 261 Phocylides (III) 71 mi           | 319 Stiborius (IV) 27 mi      |
| 262 Piazzi Smyth (II) 8 mi           | 320 Stöfler (IV) 78 mi        |
| 263 Picard (II) 14 mi                | 321 Strabo (II) 34 mi         |
| 264 Piccolomini (IV) 55 mi           | 322 Struve (II) 106 mi        |
| 265 Pickering (IV) 9 mi              | 323 Tacitus (IV) 25 mi        |
| 266 Pictet (III) 39 mi               | 324 Taruntius (I) 35 mi       |
| 267 Pitatus (III) 60 mi              | 325 Taylor (IV) 26x21 mi      |
| 268 Pitiscus (IV) 16 mi              | 326 Theaetetus (I) 16 mi      |
| 269 Plana (II) 27 mi                 | 327 Thebit (III) 35 mi        |
| 270 Plato (II) 63 mi                 | 328 Theophilus (IV) 62 mi     |
| 271 Playfair (IV) 30 mi              | 329 Timaeus (II)(III) 21 mi   |
| 272 Plinius (II) 27 mi               | 330 Timocharis (II) 21 mi     |
| 273 Polybius (IV) 26 mi              | 331 Tisserand (I) 23 mi       |
| 274 Pons (IV) 27x31 mi               | 332 Tobias Mayer (II) 21 mi   |
| 275 Pontanus (IV) 36 mi              | 333 Torricelli (IV) 14 mi     |
| 276 Posidonius (II) 59 mi            | 334 Tralles (I) 27 mi         |
| 277 Prinz (II) 29 mi                 | 335 Triesnecker (I) 16 mi     |
| 278 Proclus (II) 28 mi               | 336 Tycho (III) 53 mi         |
| 279 Protagoras (I) 14 mi             | 337 Ukert (II) 14 mi          |
| 280 Ptolemaeus (III) 95 mi           | 338 Vendelinus (IV) 91 mi     |
| 281 Purbach (III) 73 mi              | 339 le Verrier (II) 12 mi     |
| 282 Pythagoras (III) 81 mi           | 340 Vieta (III) 54 mi         |
| 283 Pytheas (II) 12 mi               | 341 Vitello (III) 26 mi       |
| 284 Rabbi Levi (IV) 50 mi            | 342 Vitruvius (I) 19 mi       |
| 285 Ramsden (III) 16 mi              | 343 Vlacq (IV) 55 mi          |
| 286 Réaumur (IV) 33 mi               | 344 Wallace (II) 16 mi        |
| 287 Regiomontanus (III)(IV) 78x68 mi | 345 Walter (III)(IV) 82x87 mi |
| 288 Reichenbach (IV) 44 mi           | 346 Watt (IV) 41 mi           |
| 289 Reiner (II) 19 mi                | 347 Webb (IV) 14 mi           |
| 290 Reinhold (II) 30 mi              | 348 Weiss (III) 41 mi         |
| 291 Repsold (II) 67 mi               | 349 Werner (IV) 44 mi         |
| 292 Rhaeticus (I)(IV) 27x30 mi       | 350 Wilhelm (III) 67 mi       |
| 293 Rheita (IV) 44 mi                | 351 Wilkins (IV) 35 mi        |
| 294 Riccioli (III) 91 mi             | 352 Wöhler (IV) 17 mi         |
| 295 Ritter (I) 19 mi                 | 353 Wolf (III) 16 mi          |
| 296 Römer (II) 25 mi                 | 354 Wurzelbauer (III) 55 mi   |
| 297 Ross (II) 16 mi                  | 355 Zach (IV) 44 mi           |
| 298 Rothmann (IV) 26 mi              | 356 Zagut (IV) 52 mi          |
| 299 de la Rue (II) 85 mi             | 357 Zöllner (IV) 29x22 mi     |
| 300 Russell (II) 64 mi               | 358 Zucchiuss (III) 40 mi     |
| 301 Sabine (I) 19 mi                 | 359 Zupus (III) 24 mi         |

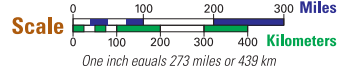
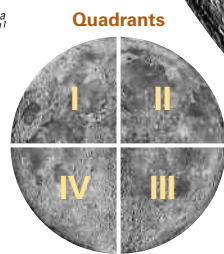


Total Solar Eclipses are one of nature's most magnificent events! The Moon completely blocks the Sun, the planets & stars come out and the white corona shimmers. Absolutely breathtaking!

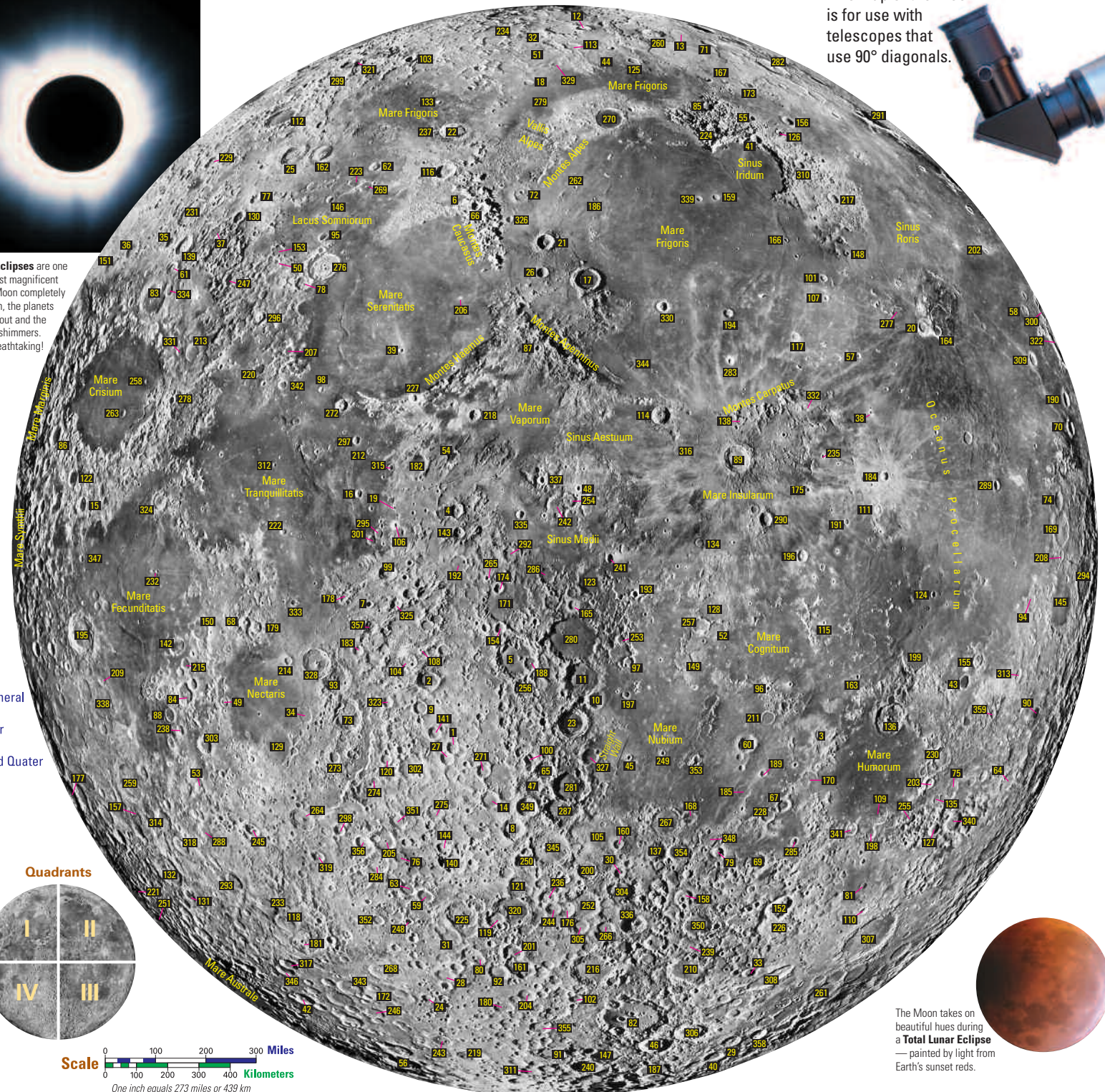
- Symbols**
- ☾ Moon in general
  - New Moon
  - ☾ First Quarter
  - ☾ Full Moon
  - ☾ Last or Third Quarter



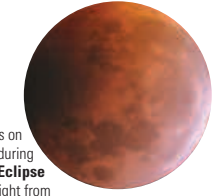
<sup>1</sup>A New Moon cannot be seen in the sky because the Moon's position is very close to the Sun. <sup>2</sup>Last Quarter is also called Third Quarter.



# Mirror-Reversed Moon



This map of the Moon is for use with telescopes that use 90° diagonals.

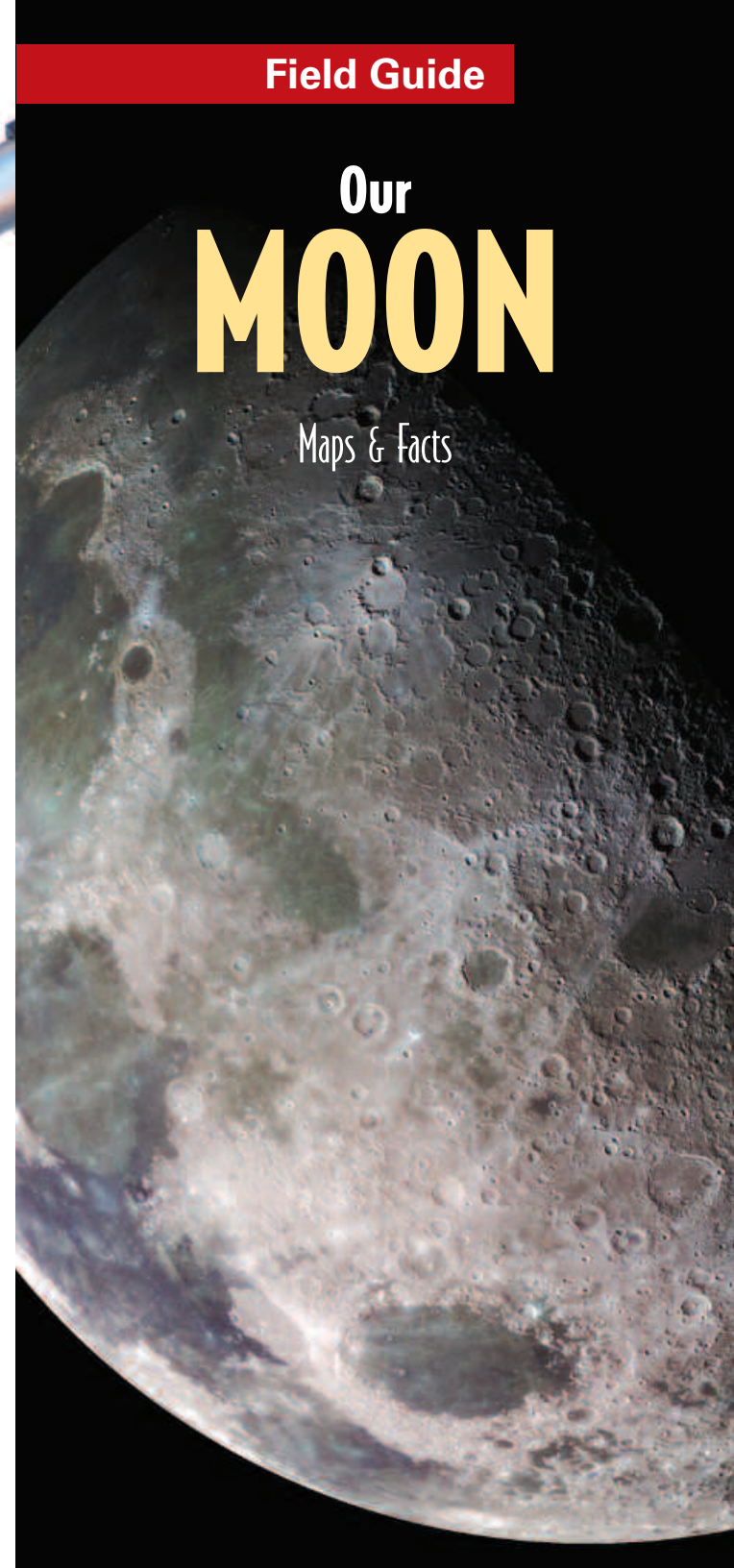


The Moon takes on beautiful hues during a Total Lunar Eclipse — painted by light from Earth's sunset reds.

# Field Guide

# Our MOON

Maps & Facts



Price y Publisher Info  
Visit [whatsouttonight.com](http://whatsouttonight.com) for more information.