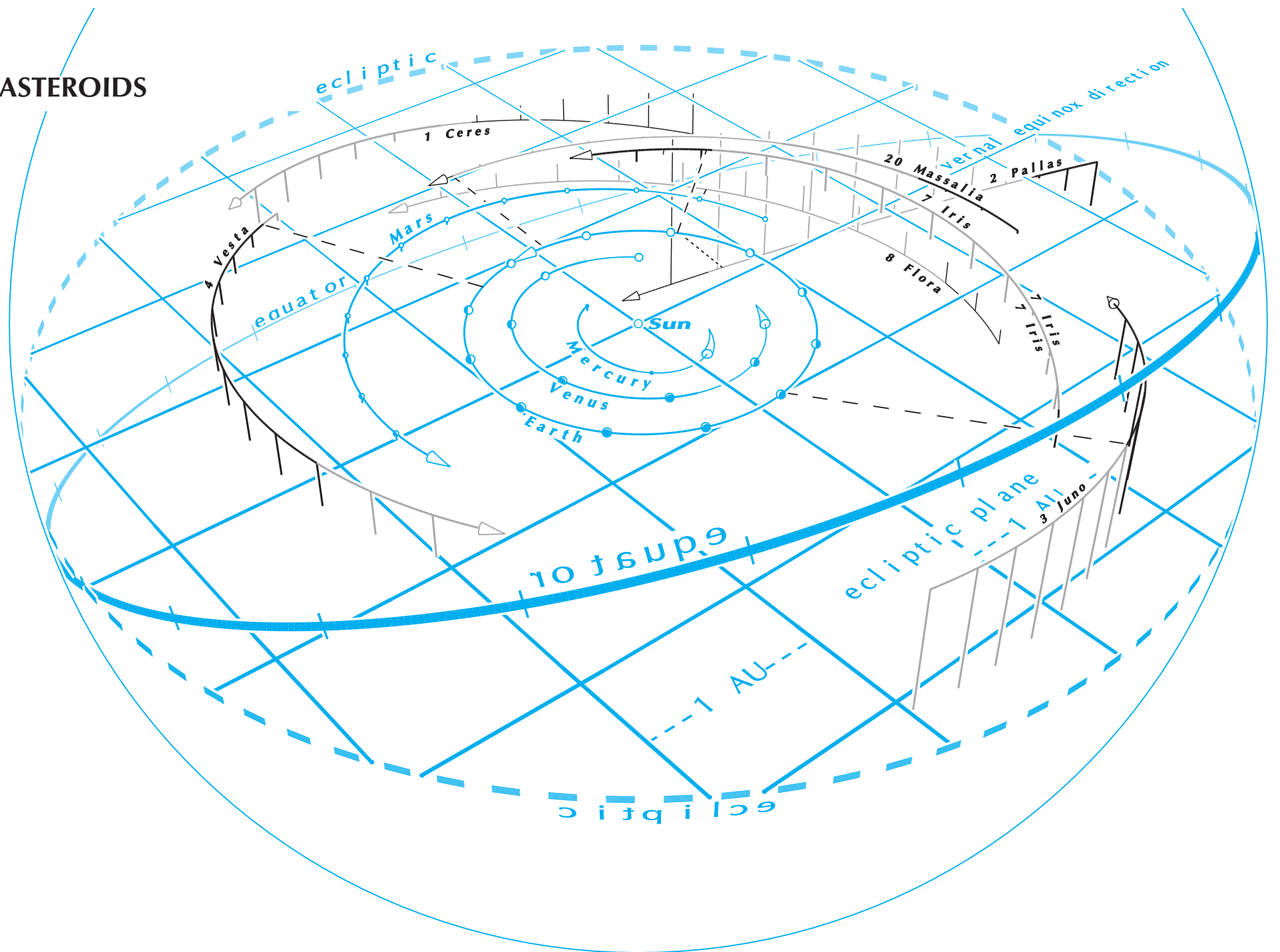


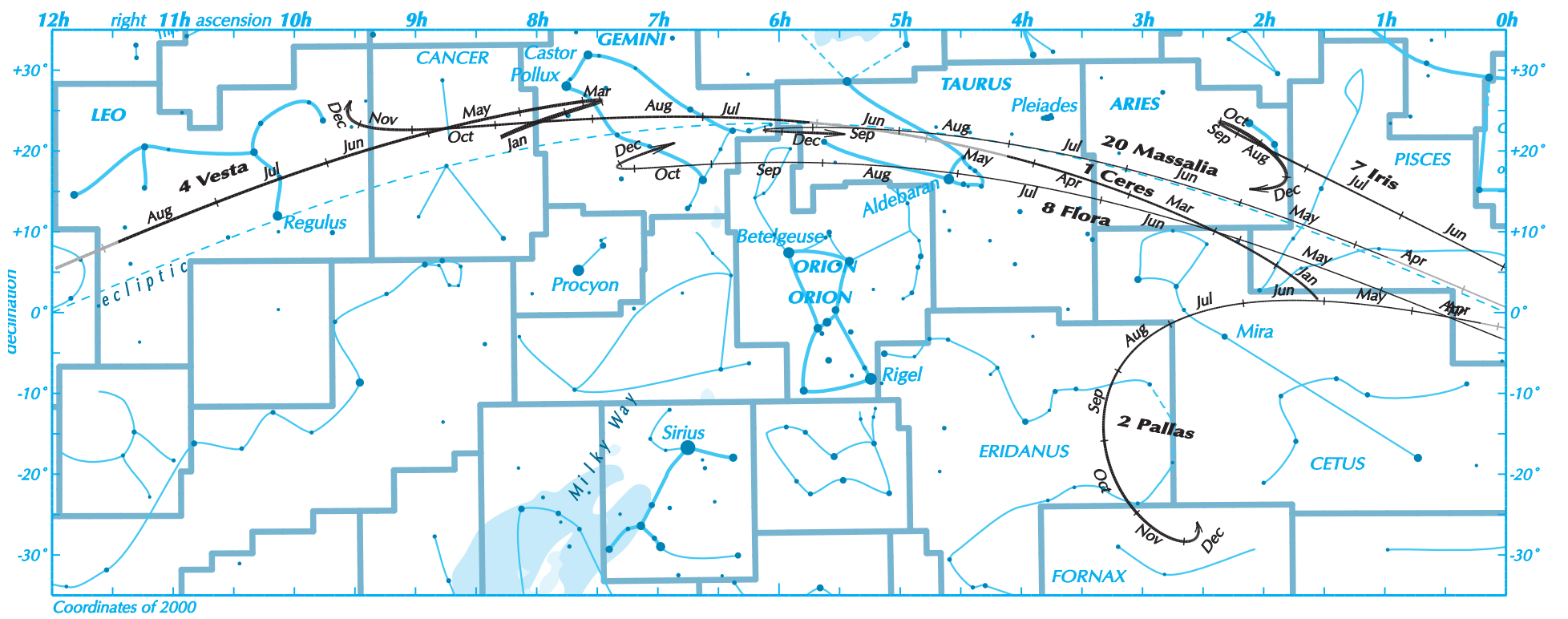
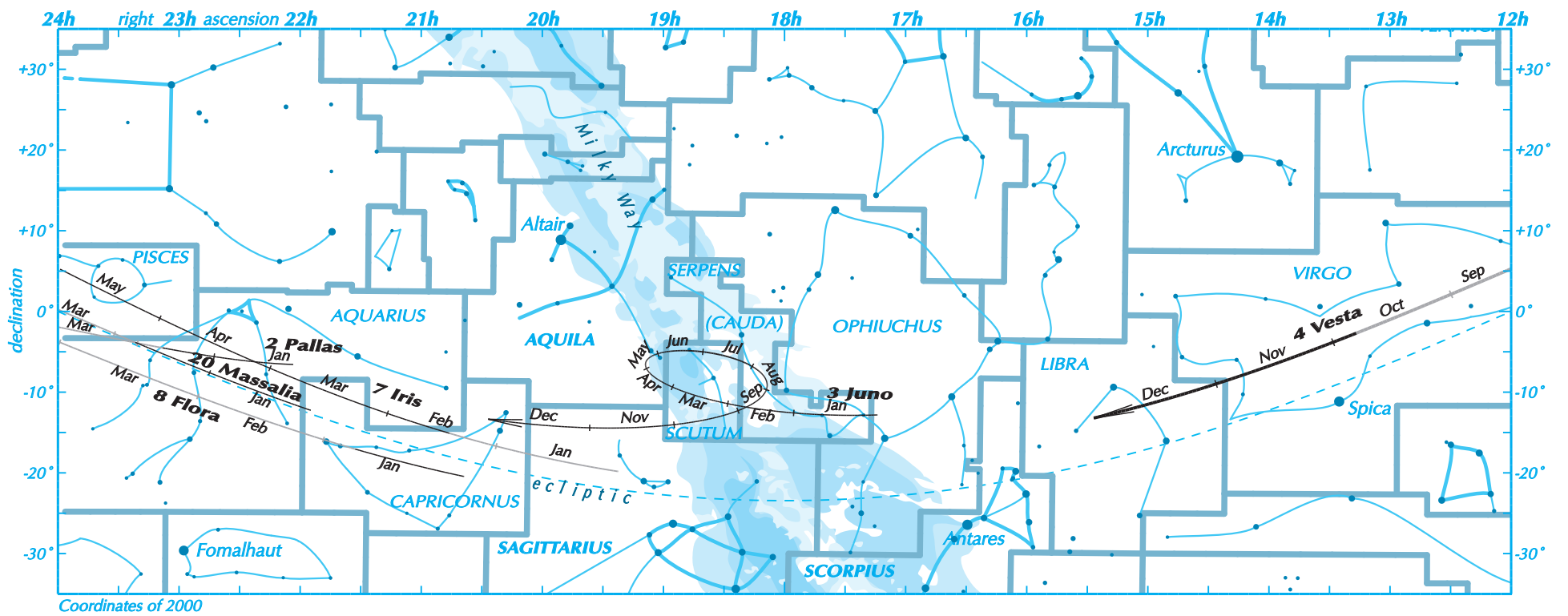
ASTEROIDS



SPATIAL VIEW of a sphere 3.5 a.u. in radius, from a viewpoint 10.5 a.u. from the Sun. Grid-lines on the ecliptic plane are 1 a.u. apart. The path of each body is drawn for the whole year (Venus, 6 months; Mercury, 2 months). Stalks to the ecliptic plane show the body's position at the start of each month. A tick pointing toward (or away from) the Sun shows where an asteroid reaches perihelion or aphelion). Where an asteroid is at opposition, a dashed line connects its position to that of the Earth at the date; each dash or gap is 0.1 AU long. Oppositions shown are in longitude (date of opposition in right ascension can be a day or more different). When an asteroid is in the morning sky (west of the Sun) as seen from Earth, its course is drawn in gray.

Orbital and other facts.	name	discov.	diam. km	q AU	a AU	Q AU	e	P years	i °	PHENOMENA.	Columns: right ascension (hours, minutes, seconds) and declination (degrees, minutes), for epoch 2000; distance from Sun and Earth, in astronomical units; elongation from Sun (degrees; negative = westward); magnitude.	
q: perihelion distance.	1 Ceres	1801	952	2.56	2.77	2.980.08	4.60	11	11	1 Ceres	r.a.(2000)dec. hedis gedis elo mag	
a: mean distance.	2 Pallas	1802	524	2.13	2.77	3.410.23	4.62	35	35	Dec 31 0	9 31 59 26 5 2.581 1.742-141 7.5	
Q: aphelion distance.	3 Juno	1804	274	1.98	2.67	3.350.26	4.36	13	13	2 Pallas	Oct 28 16 opposition	
e: eccentricity.	4 Vesta	1807	512	2.15	2.36	2.570.09	3.63	7	7	3 Juno	Jul 2 6 opposition	
P: period.	7 Iris	1847	211	1.83	2.39	2.940.23	3.68	6	6	4 Vesta	Jan 17 17 opposition	
i: inclination.	8 Flora	1847	151	1.86	2.20	2.550.16	3.27	6	6	7 Iris	Oct 29 14 opposition Nov 18 9 perihelion	
	20 Massalia	1852	145	2.07	2.41	2.750.14	3.74	1	1	8 Flora	Jul 20 10 perihelion Dec 31 0	
										#	20 Massalia	Dec 17 8 opposition

MAP for selected asteroids through the year. Ticks are at 1st of each month. Paths are thicker where asteroids are brighter; gray where they are less than 15° from the Sun.



A graph showing favorable times of the year for observing. For each asteroid, the curve's height represents elongation (angular distance from the Sun), so the top of the curve is at the time of opposition, the bottom is at the time of conjunction behind the Sun. (Elongation may not quite reach 180° or 0°, because the asteroid may be north or south of the ecliptic.) The curve is blue when the elongation is westward—that is, in the morning sky. And the curve's thickness is proportional to the asteroid's magnitude: when thickest it is brightest.

