

## INDEX

- aberration of light, 60  
 Adams, John Couch, 72, 73, 86, 87  
 Alexander, A. F. O'D., 78, 143, 147, 173, 182, 186
- Arial**  
 discovery of, 194  
 mass of, 205, 206–7  
 orbit of, 195  
 photometry of, 196–204  
 radius of, 206
- asteroids, 85  
 Herschel's nomenclatures, 58, 84  
*see also* minor planets
- atmosphere  
 Earth's, 187  
 Jupiter's, 187  
 Neptune's, 187, 188  
 planetary, 187  
 Saturn's, 187  
 Uranus's, 113, 115–17, 119–22, 155–66, 174–5, 186–9, 299
- Bath, City of  
 in Herschel's time, 23–31  
 Philosophical Society of, 29–31, 48
- binary stars, 59  
 Bode's Law, *see* Titius-Bode Law  
 Ceres, 83–5  
 charge-coupled device, 174–7, 178, 196–7  
 clusters of stars, Herschel's discussion on, 62, 63–4  
 comet(s), 82  
 Uranus mistaken for 9–19, 49, 82  
 coronagraph, 177–8  
 double stars, Herschel's observations of, 42, 45–6, 48, 59
- Earth**  
 atmosphere of, 187  
 magnetosphere of, 129, 133, 134  
 meteorology of, 181
- Ferguson, James, 28, 36, 38–9, 52, 88  
 Flamsteed, John, 67, 68, 69, 70, 71, 74, 75, 79, 80
- Galaxy, *see* Milky Way  
 Ganymede, 193, 200, 201–2, 204
- Halley's Comet, 82  
 Herschel, Caroline, 36  
 astronomical work, 4–5  
 portrait, 7  
 star catalogue, 71, 77  
 Herschel, Sir John  
 at Cape of Good Hope, 55  
 on discovery of Neptune, 86, 89  
 and naming of Uranus's satellites, 194  
 Herschel, Sir William  
*Astronomical Journal*, 40–2, 44–52  
 astronomical observations, 41, 42–50, 56–65  
 and Bath Philosophical Society, 30, 31, 34, 48  
 on 'construction of the heavens', 55–66  
 contribution to astronomy, 3–5, 55–8, 295–6  
 discovery of Uranus, 9–19, 48–53, 56, 68, 82, 87–8  
 discovery of Uranus's satellites, 193–4  
 double star observations, 59  
 growth of scientific interests, 27, 36–42  
 on Milky Way, 62–3  
 on motion of solar system, 60–62  
 his move from Bath, 51, 55  
 musical career, 23, 40  
 on nebulae, 63–6  
 planetary observations, 41, 42, 45, 46, 84, 144, 212  
 portrait, 6  
 telescopes, 3, 40, 42–4, 48–9, 55–6

- Io, 135–6  
ionosphere, 130–2, 134
- Juno*, 85
- Jupiter  
atmosphere of, 187  
magnetosphere of, 125–6, 134, 135–6  
meteorology of, 174, 182–5  
ring of, 227–30
- Lalande, J.J.de, 37, 60–1, 69, 70, 71  
Le Verrier, Urbain J.J., 73, 74, 78, 86, 87
- magnetosphere(s), 125–40  
comparison of, 134  
Earth's, 129, 133, 134  
electric fields in, 128–30, 132  
Jupiter's, 125–6, 134, 135–6  
magnetospheric 'storms', 127  
Mars's, 134  
Mercury's, 134, 135  
Saturn's, 134, 136  
Uranus's 137–40, 290
- Maskelyne, Nevil, 3, 49–50, 51, 52, 60, 85, 89  
Mayer, Tobias, 60, 67, 68, 69, 70, 74, 75, 80  
Milky Way, Herschel's study of, 62  
minor planets, 83  
*see also* asteroids
- Miranda  
discovery of, 194  
mass of, 205, 206–7  
orbit of, 195  
photometry of, 196–204  
radius of, 206
- Moon, Herschel's observations of, 44–5  
nebulae, Herschel's study of, 63–5
- Neptune  
atmosphere of, 187, 188  
brightness variations of, 147, 186  
cloud structure of, 165, 187, 188  
compared with Uranus, 155–7, 165  
discovery of, 74, 86–7  
formations of, 112  
imaging of, 173–4, 176–7, 178, 186–7  
meteorology of, 185–9  
rotation period of, 147  
satellites of, 194  
structure of, 113, 157
- Nereid, discovery of, 194
- Oberon  
discovery of, 144, 195  
mass of, 206–7  
orbit of, 144, 195  
photometry of, 196–204  
radius of, 206
- Orion Nebula, Herschel's observations of, 39, 41, 63
- Pallas, 83–5  
parallax, stellar, 45–6, 47–8, 59  
planetary nebulae  
Herschel's nomenclature, 58  
Herschel's observations of, 64–5  
proper motion of stars, 60, 61  
protoplanets  
evolution of, 103–5  
formations of, 100–2
- rings, planetary  
comparison of, 226–30  
Jupiter's, 227–30  
Saturn's, 136, 177, 201–2, 204, 227–30  
Uranus's, 114, 117, 140, 146, 177–8, 208, 211–31, 237–52, 288–9, 298
- Saturn  
atmosphere of, 187  
magnetosphere of, 134, 136  
meteorology of, 174, 182–5  
rings of, 136, 177, 201–2, 204, 227–30  
satellites of, 136, 177  
solar apex, 60–1  
Herschel's nomenclature, 58  
solar system, origin of, 93–4, 100–6, 231  
solar wind, 125–8, 130–40  
Space Telescope, 178, 252, 259–73  
instrumentation on, 266–70  
launch of, 271–2  
management of, 270–1  
sensitivity of, 264–6  
spatial resolution of, 261–2  
wavelength range of, 262–4
- Titan, 136
- Titania  
discovery of, 193  
mass of, 205, 206–7  
orbit of, 195  
photometry of, 196–204  
radius of, 206
- Titius-Bode Law, 81–7, 93
- Triton, discovery of, 194
- Umbriel  
discovery of, 194  
mass of, 205, 206–7  
orbit of, 195  
photometry of, 196–204  
radius of, 206
- Uranus  
atmosphere of, 113, 115–17, 119–22, 155–66, 174–5, 186–9, 299  
Bouvard's Tables of, 72, 74  
brightness variations of, 144, 147–8, 186

cloud characteristics of, 162,  
 164, 186  
 composition of, 94–106, 112–3  
 115, 116–17, 119–22, 156,  
 162–6  
 discovery of, 9–19, 35, 48–53,  
 56, 82, 87–8  
 figure of, 96–7, 113–14,  
 115–20, 145–7, 216, 248–9,  
 286  
 formation of, 94–106, 112–13  
 gravitational field of, 113–4,  
 115–21  
 imaging of, 173–8, 186–7  
 internal structure of, 96–100,  
 111–22, 156, 161–5  
 magnetosphere of, 137–40, 290  
 mass of, 155  
 meteorology of, 185–9  
 microwave spectrum of, 95,  
 115, 160, 164, 165–6, 186,  
 299  
 perturbations in orbit of, 72–5,  
 86, 93  
 pre-discovery observation of,  
 67–75  
 rings of, 114, 117, 140, 146,  
 177–8, 208, 211–31, 237–52  
 288–9, 298  
 rotation period of, 97, 98–9,  
 111, 114–5, 143–52, 248–9  
 satellites of, 140, 144, 177–8,  
 193–209, 210, 219–21,  
 223, 250, 289–90, 298  
 size of, 114, 143, 155, 173, 248  
 solar heating of, 163  
 spectrum of, 115, 121, 149–51,  
 157–60, 164, 186  
 Voyager encounter with, 152,  
 275–91, 297

#### Uranus's rings

composition of, 215  
 discovery of, 212–3  
 dynamics of, 217–26, 237,  
 246–8, 250  
 occultations by, 146, 237–45  
 structure of 213–15, 216, 240–6  
 Voyager observations of, 288–9

#### Vesta, 85

#### Voyager 2

Ganymede encounter, 204  
 Neptune encounter, 178, 275,  
 279  
 Saturn encounter, 183, 227  
 Uranus encounter, 152, 178,  
 208, 251, 271–2, 275–91, 297