

- radioactive heating 93, 160
synodic periods 27, 28
other systems 161
- Planisphere 25
- plate measuring machines
179-80, 237-8
- plate tectonics 93, 139
- Pleiades 12, 171, 173, 176, 184
- Plösl eyepiece 21
- Pluto 129, 152
atmosphere 152
mass 152T
orbit 152
satellites 152
size 152
- Pogson, Norman 9
- polarization:
of radio sources 210
of starlight 184
- Pole Star 21
- Pollux 68
- Population I stars 166 *et seq*
- Population II stars 168
- position angle, measuring 69
- Praesepe (cluster) 173, 176, 181T
- precession 15, 16, 17, 72
- prime focus 229
- projection methods (Sun) 82, 85, 86
- proper motion 12, 161
- protogalaxy, the 168-9
- protogalaxies 226
- protostar(s) 59, 60, 160
- Ptolemy 10
- pulsars 71-2
magnetic field of 71
CP 1919 : 71
NP 0531 (Crab Nebula) 71, 72, 74-5
PSR 1937 + 215: 72
Vela 72
- Quasars (quasi-stellar objects - QSO) 215, 223
and BL Lacertae objects 209
and galaxies 227
radio (quasi stellar sources - QSS) 208-9
redshift of 209, 222, 225, 227
and Seyferts 209
3C 48 : 208
3C 236 : 209
3C 273 : 208
- radar observations:
of meteors 157, 244
of Mercury 118
of Venus 121
- radar ranging of:
minor planets 27, 29
Moon 10
planets 197
Sun 10
Venus 27, 29
- radial motion 12
- radiant 157, 162
- radiation era 226
- radioactive elements 93, 160
- radio emission by
galaxies 191
Jupiter 136
- radio galaxies (*see galaxies, radio*)
- radio source(s)
extragalactic 209
in galactic centre 189
in galaxian clusters 203, 205
in galaxies 194, 209-10
'superluminal' velocities in 214
supernova remnants 185
and white holes 211
- radio telescopes 239 *et seq*
aperture synthesis 242
dish type 239
300-m Arecibo (Puerto Rico) 239, 242
100-m Effelsburg (W. Germany) 239
43-m Greenbank (Virginia) 239-40
76-m Jodrell Bank (England) 239, 241
Nançay (France) 240
Ohio (U.S.A.) 240
- Parkes (Australia) 239
Pulkovo (Leningrad) 240
grating interferometer 241
interferometer
5-km Cambridge (England) 240, 242
Mills Cross (Australia) 241
Kraus type 240
Mills Cross 241
pencil beam 241
transit 240
- radius vector 27
- reactions, endothermic 63
- reciprocity failure (colour films) 176-7
- red giants 39, 49, 61, 65, 184
- redshift 47
cosmological 197, 222
galaxian 196
gravitational 53, 222
and white dwarfs 53
- Rees, Martin 211
- reflection nebula 184
- Regio Galileo (Ganymede) 139
- regolith 107
- relativity 216 *et seq*
cosmological consequences 222 *et seq*
and deflection of starlight 221
general 72, 214, 218 *et seq*
and gravitational redshift 221
kinematic 224
and motion of Mercury 26-7, 221
proofs of 72, 221
special 218
remnants
stellar 63 *et seq*
supernova 63, 64, 71, 185
resolution
angular 11, 201
radio 201, 240-1, 241
telescopic 11, 68, 232
- resolving power (telescopic) 232
- resonance 101
- retrograde 26
motion 26
rotation 26
- Rhea 145
- Rhea Mons (Venus) 122
- Riemann, Bernhard 221
- right ascension 13, 20, 36
- Ritchey, George 229
- Roche lobe 66
- Rosette nebula 178
- rotational transitions 180 *et seq*
- Rubin, Judith 198
- Rubin, Vera 198, 207
- Russell, Henry Norris 49
- Ryle, Sir Martin 241-2
- Sagittarius A East (supernova remnant) 189
- Sagittarius A West (H II region) 189
- Sagittarius B2 (molecular cloud) 189
- Sandage, Allan 193, 197, 198
- SAS-II (satellite) 185
- satellites, artificial, tracking 96-7
equipment for 96
magnitudes of 97
orbits 96
position measurement 97
re-entry, observing 97
- Saturn 140 *et seq*
atmosphere 141
clouds 141
composition of 141
pressure 141
temperature 141
winds 141
composition 140
density 140
interior 140
interior heat source 140
magnetic field 140
observing 129
rings 141-2, 143
composition 142
origin of 142
Pioneer (spacecraft) findings 140
radio bursts from 140
'spokes' 142, 143
rotation 140, 144T
satellites 129, 142 *et seq*
'shepherd' 142
shape 140
size 140
Voyager (spacecraft) findings 140
- Schmidt, Bernhard 230
- Schmidt, Maarten 209
- Schwarzschild, Karl 73
- Schwarzschild radius 73-4, 222
- Sculptor galaxies 198-9
- Serrurier, Mark 236
- serrurier (tube) 236
- setting circles, using 19, 128
- Seyfert, Carl 207
- Seyfert galaxies (*see galaxies, active, Seyfert*)
- shadow bands 88
- Shapley, Harlow 170
- sidereal period(s) 27, 28
- sidereal time 16
- simultaneity 218
- singularity 73, 222, 228
- Sirius B 70
- de Sitter, Willem 222, 224
- Skylab 244
- solar nebula, primitive 160
- solar neutrino problem 91
- solar neutrino units 91
- Solar System 92 *et seq*
age of 160
centre of mass 26
origin of 160-1
source counts 227
space shuttle 245
space telescope 246
Spacelab 245
space-time 218
curvature 220-1, 228
universe 218 *et seq*
- speckle interferometry 52, 234
- speckles 232
- spectrograph 88
portable 88
- spectroheliograph 77
- spectrohelioscope 82, 238
- spectroscope 12
- spectroscopy 45
- spectrum 45, 46
absorption-line 45-6
black body 49
BL Lacertae 209
bright line 45, 46
electromagnetic 17
emission 45-6
solar 45, 78
- spinar 211
- spin-orbit coupling 118
- spiral galaxies (*see galaxies, spiral*)
- sporadic (meteors) 157-8
- spurious disc 232
- starquakes 72
- stars 44 *et seq*
atmospheres 54
brightest 51, 52
chemical composition 54 *et seq*
companions (non-stellar) 161
contraction times 61
densities 54, 67 *et seq*
double, observing 68-9
dwarf 49, 52
energy sources 55 *et seq*
evolution (*see stellar evolution*)
giant 49, 52, 54T, 61, 62
interiors:
giant 61, 62
main sequence 61, 62
neutron 70
white dwarf 70
ionization within 47, 48
luminosity 45, 49
main sequence 49, 52T, 61, 62
masses 52 *et seq*, 161
methods of measurement 52 *et seq*
multiple, observing 68-9
- names 8
nearest 50, 51, 52, 53T
P Cygni 55, 65
peculiar 55
peculiar A 55
population classes 54-5, 166 *et seq*, 200 *et seq*
rotation of 55, 161
Shell 55
sizes 52
measurement of 52 *et seq*, 232
structure 39, 61
supergiant 50, 52T
T Tauri 60 *et seq*, 160
temperature 47 *et seq*, 55 *et seq*
ultra-dense 67
variable, observing 56-7
white dwarf 49, 50, 65, 70
Wolf-Rayet 55
- stationary limit 223
- steady state 224-5
- stellar associations 172
OB 174
- stellar evolution 61 *et seq*
death of stars 62-3
formation 60, 184
life times 55 *et seq*, 61
main-sequence 61
nuclear time scale 58
post-main-sequence 61 *et seq*
pre-main-sequence 60
radius during 60
theoretical paths 60 *et seq*
- stellar spectra
classification of 47-8
stellar winds 78, 161
Stickney (Phobos) 132
- Sun 12, 76 *et seq*
activity 79 *et seq*, 100
age of 55 *et seq*
chromosphere 76 *et seq*
composition 58, 91
corona 13, 76-7
heating of 77
coronal holes 78-9, 91, 113
diameter, establishing 87
disc 76
energy radiation 55 *et seq*
energy sources 55 *et seq*
fibrils 81
filaments 81, 84
flares 80, 81, 84
formation 61, 91, 160
hydrogen-alpha
observations 82
limb-darkening 76, 80
magnetic field 81, 91
motion of
in galaxy 166, 172, 198
relative to background radiation 207
'neutrino problem' 91, 244
observation of 15, 82-85
filters for 86
safety in 82
photography of 84
photosphere 76
plages 84
prominences 13, 77-8, 80
radio observations 84
reversing layer 76
rotation 55, 81
shape 91
solar wind 78, 99, 119
and cosmic rays 99
effects on planets 99, 119, 137
and planetary formation 160
spicules 77
sunspot cycle 81, 90-1
long term variation 90-1
sunspots 80, 81, 82-3, 84, 90-1
temperature(s)
of chromosphere and corona 76 *et seq*
internal 76
of photosphere 76
of reversing layer 76
variations in size 91
superatom 225, 228
'superluminal' velocities 214
supernova(e) 63, 67, 197, 198, 212
- and galactic gas 187-8
and nucleosynthesis 63, 61, 169
and origin of Solar System 160
photographic searches for 212
rate 64
remnants 64-5, 71, 72, 185
in external galaxies 200
synchrotron emission 63-4
from Jupiter 136
from pulsars 72
from SN remnants 63-4
synodic periods 27
- T Tauri stars 60 *et seq*, 160
- Tammann, Gustav 197, 198
- Tarantula nebula 212
- Taurus-Littrow (Moon) 106-7
- Taylor, Gordon 148
- telescope(s)
for amateur use 18-21
Cassegrain 18, 19, 229
catadioptric 230-1
choosing 18-21
comet-seekers 19
coronagraph 77, 238
Dall-Kirkham 19
eyepieces for 21
finder 21
gamma-ray 245
guide 21
infrared 238
making 19
Maksutov 18, 231
Newtonian 18, 19, 229
photographic 19, 230
for planetary work 19
reflector 18, 19, 68, 229
refractor 18, 68, 229
rich-field 19, 57
Ritchey-Chrétien 229
Schmidt 19, 230-1
solar 19, 238
spectrohelioscope 238
X-ray 245
- telescope foci
Cassegrain 229
coudé 229
Nasmyth 237
Newtonian 229
prime 229
- telescopes, individual
Multiple Mirror (Arizona) 232
solar (Mt Hamilton) 238
solar (Kitt Peak) 238
5-m (Palomar) 232
3.8-m infrared (Mauna Kea) 238
2.5-m (Mt Wilson) 168, 191, 232
1.2-m (UK Schmidt) 237
Very Large Array (New Mexico) 242
2.34-m Wyoming 239
- telescope mountings:
altazimuth 19, 237
Dobsonian 19
equatorial 19, 24, 237
fork 20
German 20
Telesco 145
temperature
black body 49
effective 47
temperature scale, Kelvin 47
- terrae 104
- Tethys 144, 145T
- Tharsis region (Mars) 125-6
- Thea Mons (Venus) 122
- Thebe 137, 140
- Thyra 148
- tides 101
- time dilation 222
- time:
atomic 17
ephemeris 17
Greenwich mean 17
mean solar 16
sidereal 16
universal 17
- time scale
dynamical 58, 60
nuclear 58