

## Author index

- Armitage M.**  
Thinking the unthinkable 316
- Ashworth S.**  
A growth-oriented UK space strategy 20  
Space for the mass market 93
- Clark P.**  
Satellite Digest 10, 48, 90, 128, 170, 210,  
250, 290, 330, 368, 408, 458
- Corneille P.**  
A decade of gathering data on Mars 132  
Cool and dusty places 332  
Interplanetary trailblazers 310  
Invisible cosmology 462  
Liquid water flows on Mars 54  
New Horizons' Jupiter encounter 222  
The red planet comes to life 187  
Three years of MER operations 16
- Da Costa N.**  
Departure day - formalities at Star City 460
- Day D.A.**  
A wing and a prayer – Pt I 302  
Failures and setbacks – Pt II 342  
Grumman's ambitious spider 420  
Lonely bird 110  
Outpost on a desolate land 172  
Planning for a return to the Moon 56  
The Blue Gemini blues 226  
Unsung veteran of missile age 479
- Evans B.**  
Delving into Mir's astrophysical attic 184
- French F.**  
First Arab in space 105
- Frieling T.**  
The view from 1966 28
- Goodwin P.G.**  
The shores of Xanadu 116
- Griofa M.O.**  
Time for bed 266
- Hardy D.A.**  
The new super Earth 260
- Hartopp-Sancho R.**  
Space Station hardware on show 180
- Harvey B.**  
A bold and daring vision 382  
Yuval Neeman – an appreciation 273
- Hengeveld E.**  
NASA's first 'all up' test flight 468  
Space Shuttle debut – Pt II 220  
Space Shuttle debut – Pt III 300  
Space Shuttle debut – Pt IV 340  
Space Shuttle debut – Pt V 424
- Kidger N.**  
Chronology of the Space Station 24, 62,  
96, 137, 176, 216, 262,  
297, 336, 375, 414, 475
- Kopsch A.**  
The heart of astronautics 356
- Lawrie A.**  
Problems on the way to the Moon 470
- McGlynn L.**  
Breaking through the glass gantry 350
- Oberg J.**  
NASA's wake-up call 396  
Origins of ISS computer crisis 474
- Parkinson B.**  
Space and the evolving universe 464
- Parkinson D.**  
Space and the evolving universe 464
- Parry D.**  
Japan's spaceport 70
- Pesavento P.**  
Tereshkova scrapbook 60
- Phelan D.**  
The write stuff 346
- Powell J.**  
Apollo 1 capsule moved  
to new storage facility 209  
A bad day at the Cape 386
- Quine T.**  
Addicted to space – pt I 100  
Addicted to space – pt II 142  
Researcher to be first Korean in space 406
- Robertson D.F.**  
When worlds collide 256
- Seedhouse E.**  
Protecting astronauts from radiation 147  
Why astronauts feel dizzy 269
- Siddiqi A.**  
Iskusstvennyy sputnik zemli  
- 50<sup>th</sup> anniversary of Sputnik 426
- Simpson C.**  
Astronaut encourages students 14  
Atlantis completes spectacular mission 293  
BNSC assesses space policy responses 252  
Endeavour finally returns to space 378  
First images of spacecraft's test flight 91  
New Soyuz launch site takes shape 66  
Shuttle mission re-writes Space Station 50  
The ultimate space tug 212  
Time for Britain to be bold again 409
- Smotrov A.**  
Russian cosmonaut's  
visit to Manchester 168
- Spall N.**  
Extraordinary interpretations 154  
The greatest of adventures 418
- Swanson G.**  
Grumman's ambitious spider 420
- Van Beest R.**  
Atlantis completes spectacular mission 293  
Endeavour finally returns to space 378  
Shuttle mission re-writes Space Station 50
- Van de Haar G.**  
Atlantis completes spectacular mission 293  
Delving into arctic Mars 370  
Endeavour finally returns to space 378  
New solar mission to provide 3D imagery 7  
Shuttle mission re-writes Space Station 50
- Vis B.**  
Winter survival training 135
- Winter F.H.**  
William J Cecka, Jr – an appreciation 274
- Zaitsev Y.**  
Lessons from Salyut 7  
– launched 25 years ago 248  
The growing problem with  
space junk in near-Earth space 325
- Zheleznyakov A.**  
The growing problem of space debris 76

## Subject index

- A**
- Apollo 28, 209, 468  
Americom 247  
Angara rocket 456  
Arabsat 107  
Ares 1 365  
Ariane 5 49, 131, 165, 246, 367, 459  
Arianespace 8, 46, 131, 165, 211, 246, 328, 367
- Arctic sea ice 206, 366  
Ashford, David 94  
Astra 45  
Astrium 45, 284, 456  
Astronauts  
Aldrin, Buzz 156  
Anderson, Clayton 336, 375, 414, 475
- Abbey, George 418  
AKARI 334  
Alcatel Alenia 88, 127  
Almaz 248  
ALOS 72

- Archambault, Lee 296, 336  
 Bean, Alan 154  
 Bowen, Stephen 209  
 Brand, Vince 220  
 Caldwell, Tracy 326, 380, 414  
 Carpenter, Scott 351, 354  
 Cernan, Gene 234  
 Chiao, Leroy 270  
 Conrad, Pete 154  
 Cooper, Gordon 354  
 Crippen, Bob 220, 424  
 Curbeam, Robert 4, 50, 51, 96  
 Drew, Alvin 326, 380, 414  
 Engle, Joe 301  
 Eyhart, Léopold 127, 266  
 Fincke, Mike 461  
 Foale, Michael 13, 14  
 Forrester, Patrick 296, 336  
 Fossum, Mike 209  
 Fuglesang, Christer 4, 45, 50, 51, 96  
 Fullerton, Gordon 140  
 Garan, Ron 209  
 Garriott, Owen 454  
 Glenn, John 351  
 Haise, Fred 140  
 Ham, Ken 209  
 Higginbotham, Joan 4, 51, 96  
 Hobaugth, Charlie 326, 380, 414  
 Horowitz, Scott 326  
 Irwin, Jim 156  
 Kelly, Mike 209  
 Kelly, Scott 326, 380, 414  
 Kuipers, André 135  
 Lopez-Alegria, Michael 24, 51, 62, 103, 137, 142, 146, 176, 216, 262  
 Mastracchio, Richard 326, 380, 414  
 Morgan, Barbara 326, 380, 414  
 Nowak, Lisa 126  
 Nyberg, Karen 209  
 Oefelein, William 4, 51, 96, 126  
 Olivas, John "Danny" 296, 336  
 Patrick, Nicholas 4, 13, 14, 51, 96  
 Polansky, Mark 4, 51, 96  
 Reilly, Jim 296, 336  
 Reiter, Thomas 24, 45, 50, 62, 96, 126, 146, 266  
 Schirra, Wally 246, 352, 354  
 Schlegel, Hans 127  
 Scott, Dave 156  
 Sellers, Piers 13, 14, 21, 126, 411  
 Sharman, Helen 13  
 Shipman, Colleen 126  
 Sturckow, Rick 296, 336  
 Swanson, Steven 293, 336  
 Thirsk, Bob 135  
 Truly, Dick 301  
 Whitson, Peggy 102, 215, 271, 460  
 Williams, Dave 326, 380, 414  
 Williams, Sunita 4, 51, 96, 137, 176, 216, 262, 298, 336  
 Wilson, Stephanie 126  
 Young, John 220, 424  
 Astrotech Space 49  
 Atlas 168  
 Atlas Able 386  
 Atlas Towers 328  
 ATV 212, 459  
 Auque, François 165  
 Avanti Communications 406  
**B**  
 Baikonur 104  
 Belgium 331  
 Bezos, Jeff 91  
 Bibby, Cecelia 350  
 BIS 14, 125, 327  
 British Astronauts 13, 20, 125, 454  
 Blessed, Brian 455  
 Blue Gemini 226  
 Blue Origin 91  
 Boeing 247, 365  
 Branson, Sir Richard 89  
 Brazil 45, 246, 407  
 Bristol Spaceplanes 21  
 British National Space Centre 6, 85, 93, 208, 251, 253, 410, 454  
 Britons in Space 125, 412  
**C**  
 Canada 90, 373  
 Canup, Dr Robin 259  
 CASPER 266  
 Cassini 47, 367  
 CEAS 407  
 Cecka Jr, William J 274  
 Chandra 466  
 China 5, 9, 46, 129, 209, 211, 456  
 Long March 46, 129, 211, 249, 291  
 Shenzhou 12, 168, 365  
 Clarke, Sir Arthur C 454  
 Close, Prof Frank 410  
 Clyde Space 169  
 COBE 465  
 Columbus (laboratory) 127  
 Comet McNaught 124  
 Cosmology 462, 465  
 Cosmonauts  
 Bykovskiy, Valeriy 60  
 Feoktistov, Konstantin 60  
 Gagarin, Yuri 60  
 Glushko, Valentin 60  
 Keldysh, Mstislav 60  
 Khaleed, Faiz 135  
 Kirkalev, Sergei 246  
 Kononenko, Oleg 135  
 Korolev, Sergei 60  
 Kotov, Oleg 262, 297, 336, 375, 414, 475  
 Malenchenko, Yuri 102, 215  
 Muszaphar, Sheikh 135  
 Nikolayev, Adrian 60  
 Sharipov, Salizhan 461  
 Skvortsov, Aleksandr 135  
 Surayev, Maksim 246  
 Tyurin, Mikhail 24, 51, 62, 96, 103, 137, 146, 176, 216, 262  
 Tereshkova, Valentina 60  
 Volkov, Alexander 168  
 Yurchikhin, Fyodor 262, 297, 325, 336, 375, 414, 475  
**D**  
 Dale, Shana 59  
 Dawn 326, 459  
 Deep Impact 209  
 Delta II 7, 87, 131, 459  
 Delta IV 11, 207  
 d'Escatha, Yannick 165  
 DIRECTV 331  
 DMCii 169  
 Dordain, Jean-Jacques 131, 165, 167, 287  
**E**  
 EADS Astrium 46, 286  
 Egiptosat 1 11  
 Energia 47, 168, 245, 367  
 ESA 4, 5, 67, 85, 86, 89, 127, 129, 167, 244, 364, 406  
 Artemis 46  
 Aurora 12, 171  
 Cluster 44, 328  
 Envisat 44, 244  
 Integral 44  
 Launch Manifest 90  
 Mars Simulation 208, 288  
 NEXT 171, 211  
 Node 2 182  
 Plank Mission 127  
 Sentinel-1 286  
 Ulysses 11  
 Vega 69  
 ESP 244  
 EUMETSAT 166, 324  
 European Commission 404  
 European Spaceport 67  
 Eutelsat 88  
 EVE 460  
**F**  
 Fawkes, Dr Steven 93  
 Forest Fire Pollution 244  
 France 49, 167  
 French Guiana 46, 49, 67, 165, 249  
 FUSE 407  
**G**  
 Galileo 404  
 Gamma rays 462  
 Gemini Paraglider 302, 342  
 General Electric 129  
 Germany 169, 289, 364  
 Gibson, Dr Ian 93  
 GIOVE-A 247  
 Global Space Revenues 45  
 Glonass 5, 171, 291  
 Goddard 91  
 GOME-2 166  
 Google 405  
 Griffin, Michael 131, 287  
**H**  
 Hardy, David 257, 260  
 Horton, Richard 88  
 Hubble Space Telescope 6, 288, 467  
 Hyderabad 457  
 HYLAS 406  
 Hyundai 169

- I**
- ILS 9, 49, 207, 288, 331, 406  
 Imagawa, Dr Kichiro 205  
 India 5, 46, 89, 367, 382, 456  
   GSLV 46, 365, 456  
   PSLV 89, 456  
 Indonesia 331  
 Infrared Astronomy 332  
 Inmarsat 286, 366  
 Integral 463  
 Iran 167  
 Iridium Satellite 129, 406  
 Israel 273  
 ISRO 207  
 ISS 6, 9, 24, 47, 50, 62, 96, 131, 142, 176, 180, 212, 216, 262, 292, 297, 336, 375, 414, 475  
   Computers 474  
   Crew 246, 262, 331  
   Expedition 14 24, 51, 96, 137, 176, 216  
   Expedition 15 262, 336, 416  
   Expedition 16 215, 331  
   Russia 245  
 Italy 169
- J**
- Japan 405, 406, 460  
 Astronauts  
   Hoshide, Akihiko 24, 171, 209  
   Yamazaki, Naoko 24  
 JAXA 5, 49, 171, 205, 327  
   Kibo Modules 181, 460  
   Spaceport 70  
 Jupiter 222, 249, 312
- K**
- Kaul, Dr Raj 149  
 Kazakhstan 46, 457  
 Khomyakov, Mikhail 434  
 Korea 85, 286  
 Astronauts  
   San, Ko 85, 406, 460  
   So-yeon, Yi 85, 460  
 Korolev, Sergei 60, 427  
 Khrunichev 131
- L**
- Lacombe, Carole 131  
 Le Gall, Jean-Yves 165  
 LEO 364  
 Levy, Jonathan 94  
 Logica CMG 364
- M**
- Magna Parva 454  
 Malaysia 331  
 Manchester 168  
 Marathon 264  
 Mars  
   China 9  
   Express 187  
   Global Surveyor 8, 54, 132, 204  
   India 207  
   Marsis 46  
   MATADOR 45  
   MER 16, 407  
   MOLA 132  
   MRO 18  
   Odyssey 407  
   Opportunity 16, 19  
   Orbiter Camera 54  
   Phoenix Mars Lander 247, 329, 371  
   Robotic Missions 85  
   Russia 9, 208, 405  
   Space Radiation 147  
   Topographic Maps 188  
 Martynov, Dr Alexander 168  
 Measat 49  
 Meteosat 324  
 MetOp 166, 245  
 Minotaur 49  
 Mir 184  
 MODS 229  
 Moon, the 8  
   Apollo Lunar Lander 88  
   Google 405  
   Korea 286  
   LRO/LCROSS 172  
   Lunar Base 45, 172, 420  
   MoonLITE 84  
   MoonRaker 84  
   Orion 13 56  
   Return 172  
   Space Soon 154
- N**
- Nair, Madhavan 165  
 NASA 7, 8, 11, 14, 85, 126, 251, 406  
   Lunar Timetable 172  
   Emergency Egress System 11  
   Global Exploration Strategy 59  
   Messenger 12  
   New Horizons 222, 249  
   Saturn 1B 29  
   Saturn V 31  
   Ulysses 11  
   Vision for Space Exploration 56  
 National Space Symposium 208  
 Neeman, Yuval 273  
 New Mexico 211  
 Nigeria 12, 249  
 NOAA 11  
 Norway 326  
 NPOESS 49
- O**
- Olofsson, Maud 130  
 Orbital Debris 126  
 Orbital Sciences Corporation 49, 211, 247  
 Orbview 3 169  
 Orion 164, 211, 249  
 Orthostatic Intolerance 269  
 OTV 45  
 Oural 86
- P**
- Pakistan 211  
 Pearson, Ian 326, 454  
 Perminov, Anatoly 131, 165, 167  
 Pesavento, Peter 60  
 Picardi, Giovanni 46  
 Planet-Moon Systems 256  
 Pleiades Star Cluster 333  
 Pluto 11  
 PPARC 84  
 Pratt & Whitney Rocketdyne 329  
 Prisma 457  
 Proton 457  
 ProtoStar 47
- Q**
- QinetiQ 86, 211, 331  
 QuikScat 206
- R**
- Radarsat 2 291  
 Reaction Engines 22  
 Remains Lost 246  
 Robotic Drills 364  
 Robson, Dr David 95  
 Rocket City 131  
 Romania 169  
 Royal Visit 252  
 Russia 6, 9, 60, 86, 88, 167, 364  
   Brazil 246  
   Comsats 207  
   Kvant 184  
   Progress M-59 138  
   Proton Launchers 12, 49, 88, 131, 331, 406  
   Mars Simulation 208  
   Mir Space Station 184  
   OKA-T 245  
   Rokot 131  
   Russian Space Agency 67, 251  
   Winter survival training 135  
 Ryan, Cornelius 346
- S**
- SACTO 470  
 Sainsbury, Lord 8, 20  
 Salyut 7 248  
 Sarabhai, Vikram 382  
 Saturn 1 470  
 Saturn 5 468, 470  
 Sea Launch 11, 126, 211, 329  
 SES 49, 129, 288  
 SEWEG 409  
 Shackleton Crater 172  
 Skylon 22  
 Smoot, George 334  
 Solar Storm 44  
 Southwood, David 407  
 Soyuz 2-1b 66, 88  
 Soyuz Fregat 46, 88  
 Soyuz ST Boosters 249  
 Soyuz TMA 6, 9, 26, 285  
 Soyuz TMA-9 24, 26, 142, 219  
 Soyuz TMA-10 262  
 Space Art 350  
 SpaceDev 211

Spacefleet	130, 285	Travel Insurance	167	UK Earth Observation Centre	244
Spacehab	49	Space-X	168	UK Space Strategy	20, 85, 125, 252, 255, 327, 409, 455
Space Insight	6	SPHERES	218	United Arab Emirates	286
Space Junk	325	Sputnik	426	United Launch Alliance	211
Space Pilot Training	89	SSTL	12, 129, 169, 211, 365	United Space Alliance	49
Space Radiation	147	Starbrook	6	US Air Force	45, 49, 110, 226, 249
Space Shuttle		Starchaser Industries	21, 89, 131	US Navy	49
Atlantis	245, 292, 336	Star City	460	US Federal Aviation Administration	89
Columbia	211, 220, 424	STEREO	7, 124		
Discovery	45, 50, 96	Sturgess, Jonathan	88		
Endeavour	378, 414	Sweden	4, 49, 130, 457		
STS-115	11	Swift	463		
STS-116	4, 50, 51, 63, 96				
STS-117	126, 164, 296, 336	<b>T</b>			
STS-118	326, 378, 414	Tachikawa, Keiji	131	Vega (launcher)	69
STS-121	14, 21, 126	TacSat-2	49	VEGA	171
Crews	140, 209, 326	Taikonauts		Venus	8, 12, 460
Debut	220, 300, 340	Haisheng, Nie	168	Verhaert Space	331
Schedule	164, 205, 407	Junlong, Fei	168	Virgin Galactic	89, 130, 168, 207, 365
30 <sup>th</sup> Anniversary	140	Tanegashima Space Centre	70	Von Braun, Wernher	346
Space Systems Loral	90	Telesat Canada	247, 291	Voyager	311, 366
Space Telescopes	287	TerraSAR-X	289		
Darwin	335	TerreStar Networks	8	<b>W</b>	
Hubble	6, 127, 246, 247, 256, 288	Themis	131	Watters, Thomas	46
James Webb	11, 129, 246	Thales Alenia Space	286, 331	Webb, James	28
Spitzer	333	Tikhonravov, Mikhail	428	Whitehorn, Wil	130
Space Tourism	89, 93, 130, 207, 284, 285, 286	Titan (Saturn)	47, 288	Wicks, Malcolm	8, 85
Al Saud, Sultan	105	TopSat	211		
Ansari, Anousheh	24, 100, 105, 142, 339, 412	Triscott, Nicola	94	<b>X</b>	
Garriott, Richard	454	TRUTHS	366	X-24A Lifting Body	110
Simonyi, Charles	262			XMM-Newton	465
Galactic Suite	366	<b>U</b>		X-Prize	100
Space Adventures	367	Ukraine	45, 211	<b>Z</b>	
				Zourek, Heinz	167

## Book index

Ball A.J. et al	Planetary Landers and Entry Probes	480
Buta R.J. et al	The de Vaucouleurs Atlas of Galaxies	481
Crassidis J.L. et al	The Malcolm D. Shuster Astronautics Symposium	36
Dungan T.D.	V-2	36
Furniss T. et al	Praxis Manned Spaceflight Log 1961-2006	196
Harvey B.	Space Exploration 2007	36
Howell S.B.	Handbook CCD Astronomy	197
Johnson-Freese J.	Space as a Strategic Asset	480
Jolly S.D. et al	Guidance and Control	197
Kemp K.	Destination Space	196
Klahr H. et al	Planetary Formation	481
Krone B.	Beyond Earth: The future of humans in space	196
Lipartito K. et al	The History of the Kennedy Space Center	481
Livio M. et al	Astrophysics of Life	37
Matloff G.L.	Deep Space Probes: To the Outer Solar System and Beyond (Second Edition)	37
Michaud M.A.G.	Contact with Alien Civilizations	196
Millar W.	The Amateur Astronomer's Introduction to the Celestial Sphere	481
O'Meara S.	Steve O'Meara's Herschel 400 Observing Guide	481
Rieke G.H.	The Last of the Great Observatories	37
Schmitt H.H.	Return to the Moon	36
Sparrow G. et al	Spaceflight: The Complete Story from Sputnik to Shuttle and Beyond	480
Vadali S.R.	Spaceflight Mechanics	197
Whitfield S.	Project Gemini: Pocket Guide	480
Whitfield S.	Project Mercury: Pocket Guide	480
Williams B.G.	Astrodynamics 2005	37
Williamson M.	Space: The Fragile Frontier	37
Williamson M.	Spacecraft Technology: The Early Years	36
Young A.	Lunar and Planetary Rovers	480