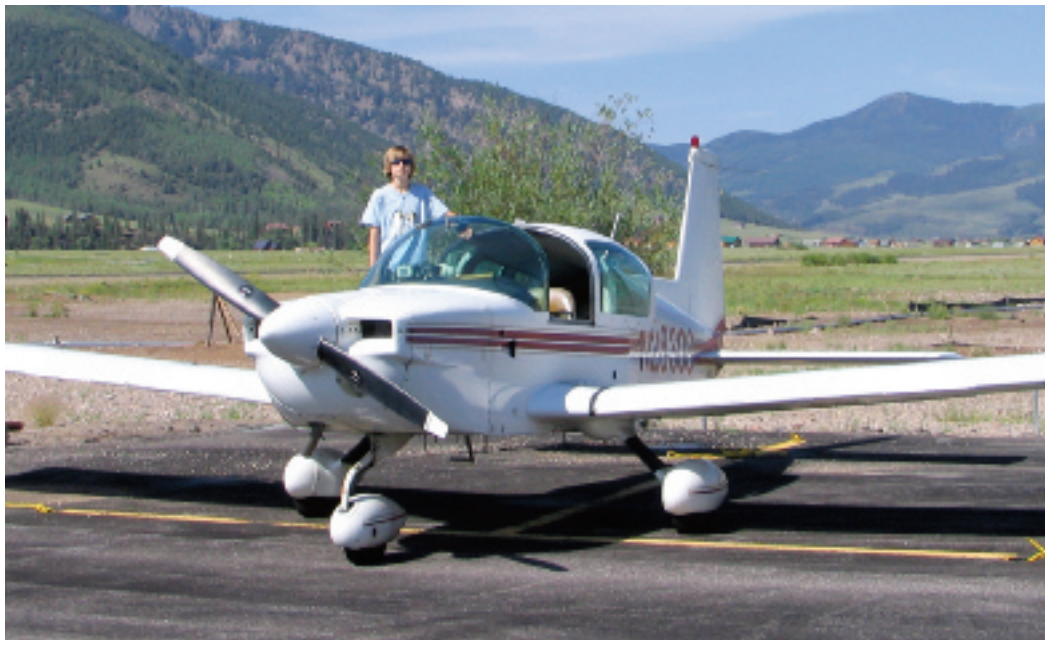
The slum child and the spaceman

General aviation is not about planes, it's about people. It's about what flying can do to raise people's sights, expand their horizons and help them achieve their potential. Pilots from vastly different backgrounds are brought together by a love of aviation, and no matter where in the world they come from, they speak the same language. Here, ***Pat Malone*** *tells the stories of two AOPA members, astronaut Michael Foale and charity fundraiser Gautam Lewis, who have nothing in common but their uncanny determination and the unique and special bond that all GA pilots share*



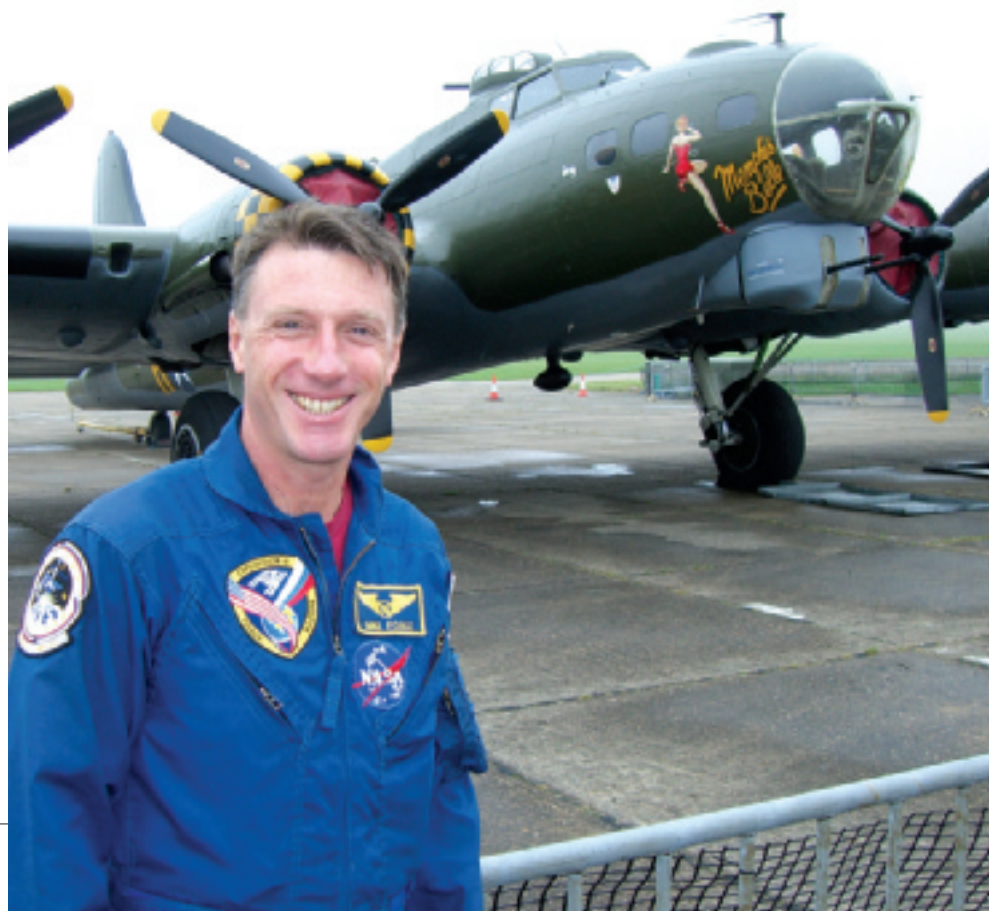
There's something peculiarly Russian about the fact that Mike Foale is seen as a talisman by his cosmonaut compatriots. Accidents seem to seek him out, and they're never his fault. He has force-landed three aeroplanes and a helicopter, one of them in the sea. He was minding his own business in a space station when a cargo module smashed into it, and tragedy was averted only by smart thinking and great good fortune. "The Russians say I bring good luck, they really do," the British-born astronaut says. "They tell me they like to have me around, because good things happen. Honestly."

It's lucky he's lucky, because he needs to be. Given his accident history, you might think twice about walking across an open field with him in case a piano fell on your head, but Dr Michael Foale welcomes challenges and relishes the task of resolving them. He is considered a safe pair of hands at NASA because he is at his best when bad things happen and lives are on the line. When you need genius-level make-do-and-mend to get you out of a hole, send for Dr Foale.

Riding into space on rockets is not without risk, and Mike has done it more than any other westerner. In six separate missions he has spent 374 days, 11 hours and 19 minutes in space. "Rockets blow up, about once in a hundred times," he says. "We're talking about enormous amounts of energy here, nought to 17,000 mph in eight minutes. And when you come back you have to get rid of the same energy in about 20 minutes. The heat shield is exposed all the time, and we don't have a material that can be guaranteed to stay intact. And the lack of an escape system is a problem in the space shuttle."

But for Mike, there could be no other life. He likes spacecraft, aeroplanes and gliders – like his fellow astronauts he flies the supersonic Northrop T38 to keep his reactions in trim. He's a scuba driver, an accomplished and fanatical windsurfer and a cross-country skier, but what he loves more than anything is a problem, preferably complicated and risky, to which he can apply his extraordinary intellect.

Mike Foale is about as close as you can get to the perfect specimen of humanity. He is a genius in astrophysics, and as a software engineer he programmes neural networks for fun. His body is as trim as his mind – fit as a wild dog, he's 50 but looks far younger. He's personable and diplomatic, but there's an edgy restlessness to him that betrays the intensity of



the ambition that has sustained him at the peak of his profession for 20 years.

Born in Louth, Lincolnshire, the son of an RAF fighter pilot, he wanted to follow in his father Colin's footsteps, but failed on eyesight. "I went through the RAF selection process at Biggin Hill but they claimed to have found some eye deficiency," he says. "I was tested later by an ophthalmologist who said there was absolutely nothing wrong, but it closed off the RAF route so I thought I'd go to Cambridge and do physics."

On his way to a first class honours degree in physics and a doctorate in astrophysics he kept up his hobby, gliding. He had taken to it at the King's School in Canterbury, where he'd been a member of the Combined Cadet Force and had flown solo in a Slingsby Sedbergh at the age of 15. In his gap year he worked as a labourer, pouring concrete for oil rigs in the tiny Highland village of Ardesier, and much of his spare money was spent at Scottish gliding clubs. At Cambridge he would cycle to Duxford for winch-launches, and he retains his connection with the airfield to this day – we met as he was promoting the Imperial War Museum's new Airspace exhibition, where our chat was interrupted by starry-eyed enthusiasts who wanted to have their photograph taken with him, get his autograph, or touch the hem of his garment.

Mike converted to power flying in 1981 at Cambridge. "I was being paid for supervising glider pilots, and I saved up that money to do the PPL conversion at Marshalls," he says. "I could afford just enough time to get my licence. I owned two pairs of jeans, a donkey jacket, a bicycle and a pilot's licence, which you may think shows I had my priorities absolutely right."

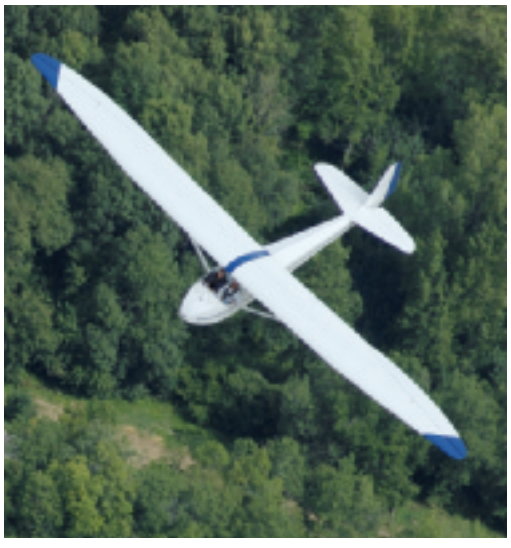
At that time the space shuttle programme was being opened up to civilian scientists, and Mike was eligible because his mother was American. He flew to Houston, sought out George Abbey, head of selection at NASA, and asked him for a job as an astronaut. Unfortunately he was one of several tens of thousands of people after the same work, but Abbey was impressed by his credentials and his drive and suggested he join NASA as a software scientist. He worked with McDonnell Douglas on the space shuttle's navigation system and supported four shuttle missions, becoming payload officer, responsible for cargoes. Twice he applied to join the astronaut corps, twice he was refused. On the third occasion, he changed tack. "You have to write an essay on why you want to go into space," he says, "and instead of all the dreamy stuff I set down a hard-headed appraisal, rehearsing the risks, the potential for difficulties, the need for teamwork and persistence, and concluding that those things that are hardest-won are the most valuable. I also told them that if I didn't get selected, I was going to quit NASA and head off to the Kwajalein Atoll (the missile-testing facility in the Pacific) and make a lot of money. That swung it."

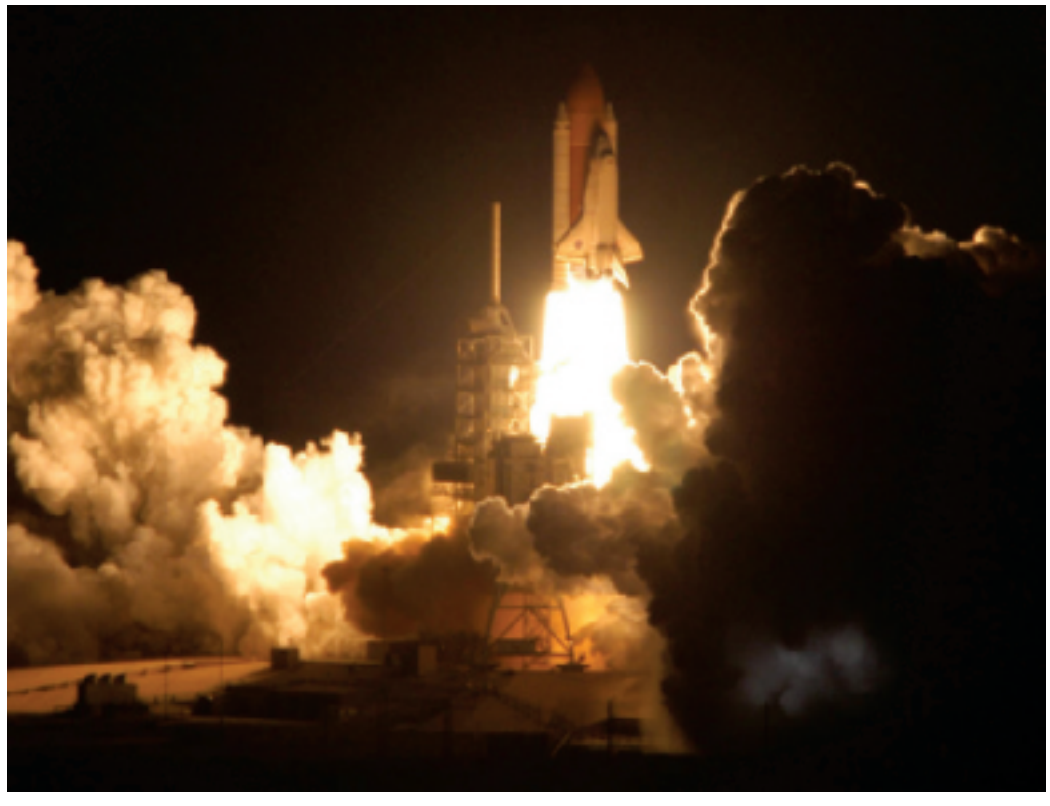
Mike was also about to get married. "I met Rhonda in a club in Houston. She was dressed as Madonna, fronting a punk band. She brushed me off because she through I was too young – in fact I was older than she was. We met later by chance, and she decided I was quite interesting after all. She's an oil geologist – the punk band didn't make it." They have two children, Genna, 15, and Ian, 12.

His starting salary of £27,000 was impressive for a 24-year-old in 1981, and flying at the NASA flying club was much cheaper than in England. Mike now has a half-share in a Grumman AA5, which he bought with the insurance after ditching a similar plane in Galveston Bay. That plane had been sitting out in a rainstorm and water had leaked into the fuel. "We'd checked for water with the fuel strainer before the flight and there was none, but the rubber tanks in the plane's wings are constructed in such a way that water can pool in the bottom and not reach the fuel lines until something dislodges it," he says. "I was flying, with (fellow astronaut) Ken Bowersox as a passenger, and we'd been up for about an hour when we ran into turbulence over an oil refinery, the water got into the fuel lines and the engine stopped. We were on final approach to Galveston Airport, which is right on the coast, with the approach lights in the sea. I switched tanks – the fuel pump was already on – and tried to restart but it wasn't having it. I took up the flaps to try to extend the glide, but it was clear we weren't going to make dry land. I held the nose right up and we stalled at around 37kt and hit the water, then just rocked gently forward. Some fishing boats came over and said, 'Can we help?' So we walked right off the wing into a boat and didn't even get our feet wet."

He also suffered an engine failure at night in a rented AA5. "It threw an exhaust valve at 3,000 feet. I knew there was a road below me but I could see an airport in the distance, with a beacon, and I managed to glide to it. Just as I was landing a fire engine came rushing up the runway and I thought, that was quick, I've only just called on the radio. But it turned out they were having a party on the field and the fire engine was part of the show, and it went straight past me and disappeared.

"My third time was a Cessna 152 where the engine failed on take-off. Again, it was an exhaust valve. I landed straight ahead and ran off the runway into the grass, but there was no damage. Once again, it was a rental aircraft,





Top left: Mike Foale's son Ian poses with the family's Grumman AA5
Left: Mike with the B17 'Memphis Belle' at the Imperial War Museum, Duxford
This page: Mike's aviation odyssey began with the Sedbergh (above), continued with the Space Shuttle and almost came to an untimely end aboard the Mir space station

and they're the worst – they get some pretty rough handling.

"I learned to fly helicopters on the Bell 47 because I thought it would make me a better astronaut. I had less than ten hours total time and my instructor got out and sent me on a solo circuit, and at about fifteen feet the engine wound down and I autorotated to the ground. The tanks were empty, and I had to call ATC and say, I'm sorry, I have to get out and walk now."

These accidents pale to insignificance compared to the incident which almost killed him in June 1997 when he was aboard the Russian space station Mir with two cosmonauts, Vasily Tsibliev and Sasha Lazutkin. Vasily had been asked to manually dock an unmanned Progress supply module in an experiment Mike says was inappropriate. "He didn't have the visual clues with which to work. When they're docking, the Russians use closing speeds about ten times faster than we do on the space shuttle, about 0.5 metres per second. And he had to fly the Progress module in by remote control from 5km, using the increasing size of the solar arrays as his only speed reference. It wasn't enough."

Progress crashed into Mir at about 18mph, puncturing one of the station's modules and causing a rapid loss of oxygen. The pressure dropped towards 600 millibars – 540 is required to sustain consciousness – and the crew worked frantically to isolate the 'Spektr' section that had been breached. They managed to seal themselves in, but the entire space station was spinning out of control, and with the solar arrays turned away from the sun, the power was failing. To estimate the rate at which they were spinning Mike put his thumb to a window and calculated from the speed at which the stars passed his thumb that they were rotating at one degree per second. Working with his estimates, ground control fired thrusters to counteract the spin, and it worked. But they were still tumbling and flipping on apparently arbitrary axes. "I'm a physicist and I understand rotation dynamics of irregular bodies like Mir," Mike says, "but I had no clue about the moments of inertia of the station, and I didn't know which axis would be different from which. It's like an aircraft with multiple centres of gravity, and it was rolling, pitching and yawing about several of them."

All they had to stop the spinning were the manoeuvring thrusters on a Soyuz capsule – and if they used up too much fuel doing that, all hope of escape would be gone. They had an 18-inch model of Mir to which torches had been taped to simulate the profusion of bolt-on modules that made up the station. Mike set the model tumbling to try to work out what was happening. He shone another torch onto the model to simulate the Sun, while Sasha came up with an ingenious device to trace their rotation, angling the earth-observing periscope towards the sun and tracing its path relative to Mir. Between them they shouted instructions to Vasily, who fired the thrusters on the attached Soyuz capsule to counter each movement, making constant allowances for the complex geometry of the station. It took

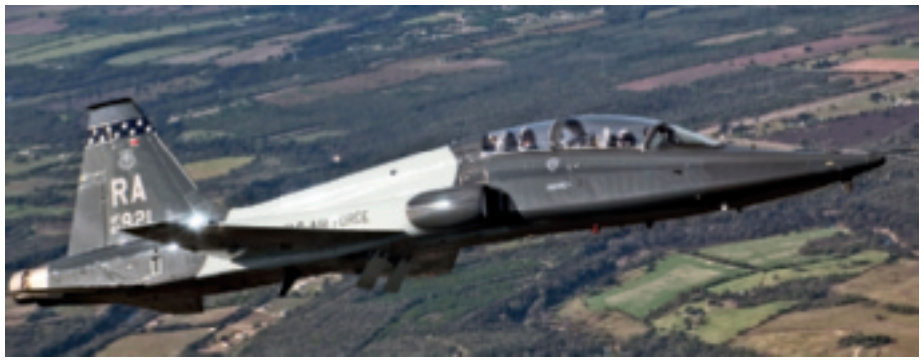
From the gutter to the sky

Gautam Lewis was born into abject poverty in a Calcutta slum and abandoned on the streets as a baby after he was crippled by polio. Paralysed from the hips down, he was rescued by missionaries and brought up in the orphanage of Mother Teresa. It was not, he says, the best start in life. "But you have to play the hand you're dealt. I'm a very lucky man."

His journey from slum child to successful music industry executive – he managed Pete Doherty's Libertines, among others – and now to student pilot is an object lesson in determination to beat the odds. At the age of 30 he has already accomplished more than most able-bodied people, and undoubtedly there's more to come. On the wings that have taken the place of his withered legs, he has seen distant horizons.

He has already travelled a long way. Gautam's rescue by Mother Teresa's nuns saved him from death in the gutter, but because of the scale of the human problem the Missionaries of Charity are unable to provide more than the basics of survival. Thus, at the age of three he was naked and dragging his useless legs across the Mission floor when he was found by Dr Patricia Lewis, who had just finished a degree in nuclear physics and was working for Mother Teresa as a volunteer. Dr Lewis had him moved to a rehabilitation centre for children, where he was given a calliper and physiotherapy.

"Mother Teresa gave me life, Dr Lewis gave me a future," said Gautam as he worked his way around the exhibits at Aero Expo at High



Left: Mike Foale hones his reactions on the supersonic Northrop T38

days to settle Mir into a stable rotation, and every hour called for inspired improvisation. Not only did they save their own lives but they continued the mission, making regular spacewalks to assess and repair damage. It was an object lesson in practical science coupled with brilliant problem-solving skills and, not least, enormous courage.

Mike Foale will now be earthbound for several years to give some of the other astronauts a chance, but he expects to be back in space after 2010. He's NASA's expert on Russian equipment, as he still flies the T38 while also evaluating other aircraft which might be useful in astronaut training – Columbia, Cirrus, Cessna 206, the PC21, the King Air, and he's even looking ahead at the Eclipse, the Javelin and other VLJs. He explains: "The T38 is a 'Space Flight Readiness Trainer'. All astronauts must have an understanding of what everyone else is doing, so they've got the big picture. The T38 provides an aviation environment where you're constructing actions that are potentially irreversible, and NASA uses that environment to help train a scientist to be an astronaut. You follow procedures, and where they do not meet the needs of the moment, you adapt. Aviation instils that lesson."

He is scathing of the British government's decision to play no part in space – Margaret Thatcher forbid the spending of money on something that offered no prospect of an early return – but says the European Space Agency is expected to open astronaut selection to Britons this summer, and there will be British astronauts in future whether the government likes it or not. ■

Left: Gautam Lewis at the controls of a C172 during Aero Expo at High Wycombe
Right: Gautam owes his life to Mother Teresa and everything else to Patricia Lewis

Wycombe, travelling surprisingly quickly on his crutches. Over two years he had six operations, spending six months in traction after one of them, but because treatment came so late the improvement was limited. When he was five Gautam was made a ward of Dr Lewis and taken to New Zealand, where she was working for a group called Scientists Against Nuclear Arms. At the age of seven, he was officially adopted by Dr Lewis.

"I haven't been the perfect son," Gautam says. "When I first went to New Zealand the experience was so overwhelming that I couldn't deal with it. I thought the whole world was Calcutta. I had never left the compound; I had no education, no idea that there were other countries, other climates. I was very defensive, very turbulent. I screamed when they put me on the plane, but my mother explained how the plane flew, how the engines worked, and I remember being fascinated."

In New Zealand they lived in the top-drawer suburb of Mission Bay, the Notting Hill of Auckland. "I went from having no horizons to having limitless horizons," Gautam says. "It was very difficult for my mother. She was 27 and single, I was seven, traumatised, angry and scared, and I had no idea where the boundaries of acceptable human behaviour were. She was the only one I could speak to – she spoke fluent Hindi and Bengali – and she taught me English and gave me a basic academic education."

Brought to London, Gautam went to Hill House, the school behind Harrods attended by Prince Charles and run by a retired Army colonel whose odd motto was: 'There's no point teaching a child to read and write if he can't swim.' An idiosyncratic and scatological education followed in a cosmopolitan environment, and Gautam went on to Bedales. "I felt encouraged to be independent regardless of disability," he says. "My biggest problem was that when I was caught drinking and smoking in the bushes, I couldn't run away." He left with eight GCSEs and two A-levels, which he says was "not bad for a late starter."

In his gap year he returned to India for the

first time with school friends, and was appalled at the poverty and squalor. "I hadn't thought of Calcutta since I left, and I was forcefully reminded of things I didn't want to remember. The people washing in the gutter, the total absence of hygiene and sanitation – I had the arrogant feeling that I was better than that. I was young and ignorant and desperately didn't want to be surrounded by disadvantaged children. I'd gone there to take the hippy trail, but instead I was confronted by my own reality." Gautam, by then an accomplished photographer, staged an exhibition of his Calcutta pictures in London, entitled 'Open Eyes'. "The eyes that were opened were my own," he says.

Gautam took an International Business Studies course at Southampton Institute, then with a friend opened a nightclub on the island of Sark called Level One. It was not a towering success, and Gautam joined Ricochet Artist Management where he looked after Keith Flint, formerly of the Prodigy, and the band Incognito. He moved on to Creation Management where he managed among other acts the Libertines, and part of his job was to attempt to arrange rehabilitation for infamous front man Pete Doherty. Thanks to Alan McGee, the driving force behind Oasis, Gautam became record label manager of Poptones Records, and later joined the British Disabled Flying Association as vice chairman.

'It doesn't matter that you're disabled in an aeroplane – you can meet anyone on equal terms'

The BDFA was started in 1993 by RAF pilot Tim Ellison, who was left a paraplegic after his Harrier suffered an engine failure and crashed. Tim's passion for flying made him determined to continue despite his disability, and to ensure that others could do the same. In 1994 he got his FAA CPL and worked as a forest fire fighting pilot until in 1997 he became the first paraplegic in the world to gain an FAA ATPL.

"What a fantastic organisation the BDFA is," says Gautam. "Had I known at 16 that I could fly, I would have gone for it then, and hopefully made it a career. It doesn't matter that you're disabled in an aeroplane – you can meet anyone on equal terms. On the ground you may be conscious that I'm struggling to keep up with you, but in the air I can be as good as any of you."

Gautam began learning to fly in October last year. His instructors include Alan Meredith, chief pilot of the British Antarctic Survey, and Paul Carvosso, a former Tornado pilot now flying for BA. "Serious Ninja pilots," says Gautam. "I'm totally in awe of them." Like the other BDFA instructors, they give their services free. The BDFA has an adapted PA28 and a Bulldog donated by the Royal Jordanian Air Force, and gives air experience flights to terminally ill children as well as flying instruction to the disabled – but with 400 members and limited resources, it's difficult to get time on the aircraft. Its patrons this year are the wheelchair athlete Tanni Grey Thompson and Pink Floyd drummer (and accomplished pilot) Nick Mason.

"I'm conscious every day of being an incredibly lucky man," says Gautam. "There are 600 million disabled people in the world, and how many of them can fly?"

If you want to support an aviation charity and have any money to spare, there can be few better causes than the BDFA. The address is BDFA, c/o Lasham Gliding Society, Lasham Airfield, Alton, Hants GU34 5SS, and you can call them on 07967 269345. ■