

VOYAGE

A Journey of Learning Through Space

THIS ISSUE: **THE SOLAR SYSTEM**

**SURVIVING
IN
SPACE**

**EARTH
FROM
SPACE**

**PLANET
SATURN**

**RUSSIA ON
THE MOON**

Great Puzzles and Competitions

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by Hartriono B. Sastrowardoyo



"I wanted to be an astronaut since I was seven, but with my average marks at school, I thought I was never going to be one"

Dave Williams at Mt Sinai Hospital, 4 December 2003. Sastrowardoyo

Dr Dafydd (Dave) Williams was at Mt Sinai Hospital in New York City on 4 December 2003 to deliver two lectures. One was for the public in general and for the doctors who sponsored some of the experiments on board his first space flight. The other, called 'An Astronaut's Life: Becoming, Being, and Beyond', was meant for the 600 middle and high school students that were in attendance. It was part of an education and public research project sponsored by NASA and the National Space Biomedical Research Institute and hosted by the Mount Sinai School of Medicine, which helps to bring spaceflight medicine to the school room, and to help students understand maths and science.

Williams spoke highly of the International Space Station, saying that he was "very proud of our asset," and noted that ISS had brought nations together for the benefit of life on Earth.

"If you forgive my merging of words, there's an 'internationalisation' of astronauts on board the ISS. We explore as a team. The culture of space exploration supersedes the culture of individual nations."

"I look out the window when I'm exercising. I'll have John Lennon's 'Imagine' or Louis Armstrong's 'What a Wonderful World' playing and I'll think, 'Why is it we can't get along?'"

One benefit of ISS that Williams noted was the use of medical robots based on ISS technology. "They've been doing complicated surgery like laparoscopy surgery using robots, and they're starting to do telerobotic surgery. Doctors in one part of Canada have done laparoscopy surgery on

patients in another part. Twenty-seven patients have been operated on in this fashion."

Born in Saskatoon, Saskatchewan, Canada, Williams wanted to be an astronaut since he was seven, but said that with his average marks in school, he thought he was never going to be one. At that time, Canada did not participate in any space programme, Russian or American, so he thought, "If I couldn't explore outer space, maybe I could explore inner space." Williams said that growing up, he liked exploring, and found it exciting.

And so, at age 13, he learned to scuba dive, not realising that twenty-five years later he

would utilise those skills to help practice space walks. Indeed, Williams served as a crewmember on the NASA Extreme Environment Mission Operations (NEEMO)-1, an underwater habitat mission run by both NASA and NOAA; Williams spent seven days living there. Such underwater habitat training is now used for crews expected to serve long durations on ISS.

When the Canadian astronaut corps was formed in 1983, Williams thought, "Maybe I'll be able to accomplish my dreams." Then under the management of the National Research Council of Canada, the astronaut corps came about when the United States invited Canada to fly an astronaut on the Space Shuttle. This invitation led to the creation of a permanent corps of Canadian astronauts to coordinate and conduct Canadian experiments in space. Six years later, the Canadian Space Agency became an independent government agency, dealing with all Canadian space matters, not just her astronauts.

In 1992 an ad was placed in Canadian newspapers asking for a second group of candidates. 5300 applied, including 600 children under the age of 10. Of that number, 20 people were selected as semi-finalists, and four, including Williams, were chosen. (The others three were Chris



Williams (third from left at the back) in training with other new astronauts in the "Vomit Comet" aircraft. The aircraft flies up and down like a roller coaster and at the top of each curve, those inside can experience "zero-gravity" for about 30 seconds.

NASA

"I was really stubborn and never gave up on my dream since I was seven. Keep persisting and it'll happen for you"

Hadfield, Michael McKay, and Julie Payette. Hadfield has flown as Mission Specialist 1 on Atlantis/STS-74, the second Shuttle-Mir docking, and on Endeavour/STS-100, an ISS assembly flight, becoming the first Canadian space walker. Payette also flew as Mission Specialist 1, on the Discovery/STS-96 flight, which was the first flight to dock and re-supply ISS. Currently, Payette is Chief Astronaut for the Canadian Space Agency. McKay resigned in 1995 due to medical reasons without making a flight, but remained active as an engineer in the astronaut programme until 1997.



Williams in the neurolab aboard shuttle STS-90 wearing the sleep cap that measured the electrical impulses from the brain, muscles, eyes and heart while he was asleep.

NASA

Williams' next flight is STS-118, originally scheduled for a November 2003 launch on board Columbia. Delays in the Return to Flight mission have pushed this back to mid-to late 2005, he said.

gets "all fired up" on: The exploration of the universe. "Now that I've had a chance to fly in space, what dreams do I have left?" he asked rhetorically.

"It's something I call 'By Fiftieth.' That is, by the 50th anniversary of Apollo, by 2019, I'd like to see humans working and living on Mars. I believe it's achievable."

Why Mars? "That's where life may have once existed," Williams said, citing the find of an Antarctic meteorite which some scientists believe to contain Martian bacteria. "If bacteria once lived there - who knows what else could have lived there?"

"For those who say that a trip to Mars by 2019 is impossible, I submit that I no longer use the word 'impossible.' Let me remind you of the little kid growing up in Canada who wanted to be an astronaut."

As he ended his lecture to the students, he closed with a quote by Henry David Thoreau: "Go confidently in the direction of your dreams. Live the life that you have imagined."



With half his body in the Lower Body Negative Pressure (LBNP) device, Williams is monitored by a fellow crewman. See the feature 'Surviving in Space' on page 10 for more about this experiment.

NASA

"It's a really cool job," Williams said of being an astronaut. He also said that he was "very proud" to be a part of the Canadian astronaut team.

"Don't give up on your dreams," Williams said, "no matter where your dreams may take you. With a lot of luck, hard work, and believing in yourself, those dreams will come true."

"I was really stubborn, and never gave up on my dream since I was seven. Keep persisting and it'll work out in the end."

His task on STS-118, along with fellow EVAer Scott Parazynski, is to install the third starboard truss segment (the S5 segment). Williams' visit to Mt Sinai Hospital was also to do some pre-flight testing on experiments that will be carried on STS-118.

"I lost seven close friends on STS-107, and I knew them personally. I know that they would want us to continue exploring."

Another dream of Williams is one that he

"By the 50th anniversary of Apollo, by 2019, I'd like to see humans working and living on Mars. I believe it's achievable."