

Extract from The Daily Telegraph 19th September 2007:

David Fearn

David Fearn, who died on August 29 aged 68, was internationally recognised as the father of ion propulsion in spacecraft, which he developed at the Royal Aircraft Establishment, Farnborough (now QinetiQ); his work enables telecommunications satellites to be positioned more accurately and, by saving on heavy rocket fuel, has made feasible missions to deep space that were previously impossible.

Until the development of ion propulsion, Earth satellites and deep space probes could be manoeuvred only by thruster rockets, using large amounts of fuel.

With ion thrusters the inert and naturally occurring gas xenon is injected into the thruster, where electrons are removed to form electrically charged atoms known as ions. These are ejected in a narrow beam producing a force in the opposite direction, with the number and speed of ions adjusted to assure pinpoint accuracy.

Fearn was the driving energy behind the development of ion thrusters in Britain, led teams from a number of British government and industrial organisations and worked in collaboration with the European Space Agency, US Air Force and Nasa.



Fearn: star at conferences

An early use of his thrusters was on ESA's Artemis satellite in 1999, when they were used in the craft's successful rescue after the failure of the launch rocket.

They will be used on the Gravity and Ocean Circulation Explorer (GOCE) satellite to be launched next year, which will measure the Earth's gravitational field with unprecedented precision. Large thrusters as pioneered by Fearn will be vital to the ESA's BepiColombo mission to place a suite of scientific instruments in the orbit of Mercury.

David Fearn was born on November 4 1938 and educated at Bridport Grammar School, taking a First in Physics and a PhD in Plasma Physics at Imperial College London. A keen athlete, he organised in his final undergraduate year the Hyde Park Road relay race, which attracted teams from throughout Europe; his running, his research and his pastime of gliding were unaffected by an eye injury sustained in the laboratory.

He continued his research at the University College of Wales, Aberystwyth, and later at Royal Holloway College before joining the RAE as a senior scientific officer in its space department. He chose to stay in the laboratory but subsequently received a Special Merit grading from the Cabinet Office in recognition of his pioneering work and international reputation.

Self-effacing but generous in his praise for others, Fearn tirelessly supported research at British universities; many of the PhD students he taught from Oxford and Southampton, and at Surrey University, where he held a visiting Chair, now hold influential positions in industry, academe and the ESA. He published more than 250 technical papers, many of

them ground-breaking.

Much of Fearn's work was undertaken in his own time; to the despair of his wife, he was unwilling to throw anything away, and his study became so full of papers that it became difficult to open the door.

In 1999 Fearn officially retired, but continued working at the same frenetic pace, despite having undergone an only partially successful multiple heart bypass operation. He had become a star performer presenting papers on his theories at conferences around the world; Eastern European students crowded round him to obtain autographs on copies of his papers, a very rare event in scientific circles.

He was a fellow and vice-president of the British Interplanetary Society and an active member of the International Academy of Astronautics and the International Astronautical Federation. At the time of his death, while carrying out a pre-flight inspection, he was preparing three papers for a conference at Florence, where he was due to receive a lifetime achievement award.

Fearn won the Berkshire six-mile track title and continued to run competitively into his fifties. He coached members of Fleet Athletic Club, was treasurer of Bracknell Athletic Club and was a life vice-president of both. He chaired his local amenity society for 10 years, and took up flying at the age of 60.

David Fearn married, in 1963, Elaine Forster; she and their son survive him.