

## EVENT SUMMARY

Moon mission astronauts meet the next generation

Held at The Royal Society on 12<sup>th</sup> March, 2010

**Host:** **The Earl of Selborne KBE FRS**  
Chairman, The Foundation for Science and Technology

**Speakers:** **Captain Neil Armstrong**, First Man on the Moon  
**Captain Jim Lovell**, Commander Apollo 13  
**Captain Gene Cernan**, Last Man on the Moon  
**Bob Gilliland**, Test Pilot for Lockheed A-12  
**General Richard Ritchie**, US Air Force  
**David Hartman**, Former host "Good Morning America"

The first and, to the present day, the last human being ever to set foot on another world were among the special guests at a meeting of the Foundation for Science and Technology held at the Royal Society on 12th March. Captain Neil Armstrong and Captain Gene Cernan were joined by Jim Lovell, the Captain of Apollo 13, as well as Bob Gilliland, the first man to fly the world's fastest airplane, the SR-71 Blackbird, and General Steve Ritchie a fighter ace of the Vietnam War. They spoke of their experiences and gave their thoughts about the US space and aviation programmes across the decades. David Hartman, the former first host of the Good Morning America TV show, 'anchored' the panel discussion.

For the invited audience of more than 200 people, this was literally the opportunity of a lifetime – only 12 men have ever walked on the Moon. From the moment that Neil Armstrong took his "giant leap for Mankind" to the day that Gene Cernan lifted off from the lunar surface to rejoin the command module of Apollo 17 was less than four years. Armstrong set foot on the moon on 21 July 1969, Cernan left it on 14 December 1972.

Steve Ritchie and Bob Gilliland explained how the space programme grew out of the aviation research programme which had resulted in aircraft such as the F-104 Starfighter flown by General Ritchie in combat – the aircraft still holds the low-level speed record for an aircraft more than 40 years later – and the SR-71, a strategic reconnaissance aircraft capable of flying at Mach

3. Ritchie highlighted the rapid progress in military technology – the air-to-air missiles on his aircraft had a strike rate of little more than 10 per cent. But the Vietnam War introduced technologies which have become standard today, such as the first laser-guided bombs.

For many of the audience it was the experience of the three astronauts which was the focus of interest. They recalled how the impetus for the space programme had come from the Cold War. The launch of the Sputnik satellite by the Soviet Union had acted as a wake-up call to the USA. So on 25 May 1961, President Kennedy issued a challenge to the whole country. He said: "I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth."

This was a huge challenge. To achieve it, three successive space programmes were instigated, as Captain Lovell explained. The first was the Mercury programme, which was concerned with actually getting a manned craft to the edge of space and return and the astronaut safely back to the earth. The second was the Gemini programme which was designed to test whether human beings could live and work in space. It also developed the techniques of space walks and docking manoeuvres.

With the benefit of these lessons, Apollo then took men to the moon and back.

All three astronauts had flown in space as part of the Gemini programmes. Jim Lovell quipped how

he wished he had paid more attention to Newtonian mechanics before he had flown – the astronauts had been shown some of Newton's original manuscripts held at the Royal Society. He said that on the space walks, when he turned a wrench to tighten a bolt "the wrench turned me!" making it difficult to keep his footing. His co-pilot could also feel the "equal and opposite reaction" to everything Lovell was doing on the exterior of the craft.

The three discussed the pressure on everyone involved in the space programme to deliver before the end of the decade, with just a couple of months between launches at one stage. Technological progress was being pushed at an enormous rate. Yet, as we all know today – they achieved it.

Jim Lovell raised an interesting hypothetical question. The oxygen tank that exploded on Apollo 13 had originally been intended for Apollo 10. What would have been the consequences for the lunar landing programme if the accident had happened to the flight *before* the scheduled moon landing mission, he wondered.

When asked about the need for future manned exploration, Gene Cernan expressed his disappointment at the recent cancellation of the project to take humans back to the moon. He said that the space programme had created many technologies that were in everyday use and that space exploration had more than repaid for the financial investment. Jim Lovell felt the decision could have "catastrophic consequences" for "our ability to explore space and the spin-offs we get from space technology". However, he felt there was a balance to be struck between manned and unmanned flights – although he noted, with reference to the Hubble telescope, that it needed human beings to actually visit it to correct the problems with it.

Neil Armstrong was more circumspect but recalled that when they were flying to the moon some 40 years ago, everyone thought that man would be walking on Mars within decades.

They were agreed that the space programme had changed humanity's perception about their place in the universe – we are all on a spaceship called Earth with finite resources.

A significant number in the audience were school or university students who were not even born when these events were played out. Yet when the formal session ended, everyone immediately rose to their feet to give the astronauts and

aviators a standing ovation. For everyone, it had been a very special occasion.

Simon Napper

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It was an honour to host these heroes of the United States and we are most grateful to the US Embassy for inviting the Foundation to host the event. The astronauts were in London on one leg of the Legends of Aerospace tour.

During their visit to London the astronauts were interviewed by Pallab Gosh, the BBC Science Correspondent. The report of the interviews can be found on the bbc web site –

[http://news.bbc.co.uk/1/hi/today/newsid\\_8565000/8565740.stm](http://news.bbc.co.uk/1/hi/today/newsid_8565000/8565740.stm) .

Before the meeting Lord Drayson, Minister for Science and Innovation met the astronauts and pilots.



From left to right: Bob Gilliland, Richard Ritchie, Lord Drayson, Jim Lovell, Gene Cernan and Neil Armstrong

Photograph credit – Professor Keith Mason, Chief Executive, STFC

The Foundation is most grateful to the staff at The Royal Society, the Institute of Physics and the Royal Astronomical Society for their help in preparing for this meeting.

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