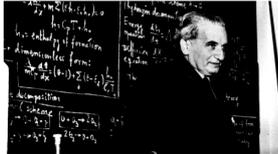


<p>Hubblecast Episode 35: Hubble – The Stuff of Legend EMBARGOED UNTIL 13:45 (CEST)/07:45 am EDT 15 Apr, 2010</p>	
<p>00:00 [Visual starts]</p> <p>00:01 [Narrator] Hubble is neither the first telescope in space, nor will it be the last, but it is the only one that can be serviced by astronauts and this unique, intimate relationship between human and machine, combined with the observatory's storied history makes Hubble the stuff of legend. This year, we celebrate 20 years of Hubble in orbit.</p> <p>00:34 [Woman] This is the Hubblecast! News and images from the NASA/ESA Hubble Space Telescope.</p> <p>00:53 [Dr. J] Welcome to the Hubblecast! Our fascination with the starry skies can be traced back to the earliest human civilisations. In antiquity, the Greeks and Romans were so taken with the heavens that they lent the names of their gods to the planets of the Solar System. Much later, our fascination with the skies was fuelled by the invention of the telescope and, much later still, this led to the development of space telescopes.</p> <p>01:20 [Narrator] In the early 20th century, scientists began to seriously think of the possibility of telescopes in space. In 1923 Hermann Oberth, who was of Romanian and German descent, and is widely considered to be the father of space telescopes, wrote a book, <i>Die Rakete zu den Planetenräumen</i>, putting the idea into print for the first time. After World War II, technology that was developed for defence was being considered for space exploration and, in 1946, the American astronomer Lyman Spitzer wrote a paper extolling the advantages of a space telescope. One of those advantages is, of course, to be free of the blurring influence of the Earth's atmosphere.</p>	 <p>Standard Hubblecast Sequence</p>  

[Dr. J]

02:03

It wasn't until the late 1960s that Spitzer's dream started to become a reality in the form of the Large Space Telescope – Hubble's first given name. But the dream — what seemed like a natural follow-on to the success of previous orbiting observatories and the US Apollo missions — was to suffer a lengthy interruption. The 1970s were a decade of challenges for the US government, which oversees NASA's budget. The Vietnam war continued through the middle of the decade and, on top of that, a crippling oil crisis had grave effects on the economy.

02:39

[Narrator]

Spitzer, who was a distinguished scientist and motivated lobbyist, campaigned tirelessly for his dream telescope in the 1970s, but budget issues continued to hamper him and his fellow space telescope visionaries. Finally, an idea to collaborate internationally brought the dream one step closer to reality. The European Space Agency stepped in the late 1970s as another "parent" to the troubled telescope, providing not only funding, but people power and literal power in the form of the solar cells — the lifeblood of this solar-powered observatory. ESA also built one of the observatory's first generation instruments, the Faint Object Camera (FOC).

03:22

[Dr. J]

In 1983, the Large Space Telescope was christened the Hubble Space Telescope after the celebrated astronomer Edwin P. Hubble. But even with proper funding and an official name, the project still faced many uphill battles. Contractors who were building the mirror and the spacecraft were going over budget and missing deadlines. This pushed the launch date further and further back and, finally, all seemed to be ready in early 1986 for an autumn departure. Then, tragically, the seven-member crew of the Space Shuttle *Challenger* was lost in an explosion just after launch on the 28th of January 1986.

04:01

[Narrator]

After the shocking Challenger disaster NASA halted all shuttle missions from 1986 through the fall of 1988 until a lengthy review could be conducted and astronaut safety assured. During the grounding of the shuttle programme, engineers continued to work on Hubble in its temporary home — a cleanroom.

04:22

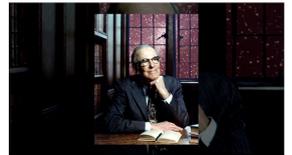
[Dr. J]

On a bright April morning in 1990, the Space Shuttle *Discovery* carried a crew of five to finally deliver Hubble to its home 600 kilometres above the Earth, decades after its initial conception.

04:33

[Narrator]

The celebrations ended quickly when, shortly after Hubble was deployed, scientists discovered a spherical aberration in the space telescope's primary mirror. The distortion in the images



— seen as a fuzzy halo — was the result of an incredibly tiny, 2-micron flaw in the shape of the primary mirror. This would be the equivalent of the thickness of two average sheets of paper. But it was enough to distort the images, frustrate scientists and engineers and prompt the ridicule of the media and taxpayers alike; Hubble became synonymous with expensive failure.

05:10
[Dr. J]

But like any legend, Hubble fought back. Aiming at correcting the optics of its flawed mirror shape and installing a new instrument as part of the maintenance plan, the first Servicing Mission to the Hubble Space Telescope was launched in December 1993. Among the seven-member crew was the European astronaut Claude Nicollier.

05:30
[Narrator]

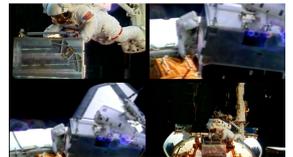
During a riveting mission, astronauts brought Hubble back to the glory its creators intended. The COSTAR package was the equivalent of corrective glasses, albeit large ones — the size of a refrigerator. Another new instrument was installed as well — the Wide Field and Planetary 2 camera that itself had corrective optics and an impressive ultraviolet detection capability.

05:55
[Dr. J]

In the following 17 years, Hubble literally changed the way we see the Universe and it discovered many new fundamental scientific truths. In the next Hubblecast, we'll be exploring some of these science highlights from the past two decades.

Last year, astronauts visited the veteran space observatory for the fifth time. The public was enthralled by the dramatic spacewalks that set time and certainly endurance records. Removing the telescope's clunky glasses — the now-obsolete COSTAR package — astronauts installed the most powerful camera now in space — the Wide Field Camera 3 — and the new Cosmic Origins Spectrograph. From what seemed like a far-fetched idea to what is arguably the most recognised icon in the space, Hubble is truly a star!

END



Hubblecast is produced by ESA/Hubble at the European Southern Observatory in Germany.

The Hubble mission is a project of international cooperation between NASA and the European Space Agency.

Credits