



1
00:00:00,000 --> 00:00:05,000
(Music)

2
00:00:05,000 --> 00:00:09,000

It's 1965:
A gallon of gas cost thirty-one cents.

3
00:00:09,000 --> 00:00:12,000

Goldfinger was the year's top movie.

4
00:00:12,000 --> 00:00:15,000

The Beatles' album, 'A Hard Day's Night,' won a Grammy.

5
00:00:15,000 --> 00:00:19,000

And, Mariner 4 became the world's first successful mission to Mars.

6
00:00:19,000 --> 00:00:22,000

Here are five things you probably didn't know about it.

7
00:00:22,000 --> 00:00:26,000

Mariner 4 was the first spacecraft to navigate using the stars,

8
00:00:26,000 --> 00:00:29,000

like ancient mariners that sailed the seas.

9
00:00:29,000 --> 00:00:33,000

Mariner 4 went farther than any other human-made object at the time,

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00:00:33,000 --> 00:00:37,000

and used the bright star Canopus as a reference.

11
00:00:37,000 --> 00:00:41,000

Once its star sensor found Canopus, gas jets on the spacecraft

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00:00:41,000 --> 00:00:46,000

kept the vehicle locked in the correct orientation for the trip to the Red Planet.

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00:00:46,000 --> 00:00:53,000

Mariner 4 reached Mars on July 14, 1965, and took 22 pictures as it flew by.

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00:00:53,000 --> 00:00:57,000

They were the first pictures ever taken of another planet from deep space.

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00:00:57,000 --> 00:01:03,000

The pictures showed moon-like craters, shattering the idea of finding life on the surface,

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00:01:03,000 --> 00:01:06,000

but opening the age of scientific Mars exploration.

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00:01:06,000 --> 00:01:12,000

Mariner 4 carried an analog television camera, the best technology at the time.

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00:01:12,000 --> 00:01:15,000

The pictures were sent back digitally, as ones and zeros.

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00:01:15,000 --> 00:01:18,000

While waiting for early computers to process the data,

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00:01:18,000 --> 00:01:21,000

engineers anxious to see a picture, created their own

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00:01:21,000 --> 00:01:25,000

by hand-coloring printouts, paint-by-number style.

22

00:01:25,000 --> 00:01:28,000

It was the first digital image of Mars from space.

23

00:01:28,000 --> 00:01:33,000

Radio dishes on Earth picked up Mariner 4's data at just 8 1/2 bits per second,

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00:01:33,000 --> 00:01:37,000

an amazing feat at the time, given the large distances involved.

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00:01:37,000 --> 00:01:41,000

It took a week to send the 22 images back to Earth.

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00:01:41,000 --> 00:01:47,000

Today, the Curiosity rover sends data almost 250,000 times faster than Mariner 4.

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00:01:47,000 --> 00:01:51,000

Mariner 4 also discovered that Mars has a very thin atmosphere.

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00:01:51,000 --> 00:01:55,000

This discovery was made by the spacecraft sending radio signals

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00:01:55,000 --> 00:01:58,000

through the Martian atmosphere as it passed behind the planet.

30

00:01:58,000 --> 00:02:01,000

This first ever visit to Mars was a boost for the United States

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00:02:01,000 --> 00:02:05,000

in the midst of the Cold War with the Soviet Union.

32

00:02:05,000 --> 00:02:08,000

President Lyndon Johnson passed out medals to NASA

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00:02:08,000 --> 00:02:12,000

and the Jet Propulsion Laboratory for the success of Mariner 4.

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00:02:12,000 --> 00:02:15,000

A lot has changed since Mariner 4.

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00:02:15,000 --> 00:02:20,000

Back then a typical engineer wore a white shirt, pencil tie and often, a pocket protector.

36

00:02:20,000 --> 00:02:22,000

Today -- not so much.