

ISSUE NO. 15

ASTRONOMY

SCIENCE MAGAZINE

REMEMBERING APOLLO 11

Looking back on the mission that propelled the United States to the frontline of space exploration on its 50th anniversary.

HIGHLIGHTS FROM 1969

A comprehensive timeline of major global events that occurred in the tumultuous summer of 1969.

LOOKING TO THE FUTURE

While we celebrate 50 years since humanity visited the moon, we ask ourselves, "What next?"

PHOTOGRAPH OF LAGOON NEBULA
HUBBLE SPACE TELESCOPE
NASA/ESA

Meade System 2000

Think of the dimensions a truly research-quality instrument would add to your observing program.

Then consider moving up to the quality and performance of a Meade 4-inch or 8-inch Schmidt-Cassegrain. For Meade Schmidt-Cassegrains, both optically and mechanically, really are the finest instruments of their kind ever offered the serious observer and astrophotographer.

And, as parts of a wide-ranging system, they are instruments that will grow with your expanding horizons.

Standard Equipment: No other commercially available Schmidt-Cassegrains offer such a list of important technical advantages, much less as standard equipment included in the Base Price:

Worm gear drive systems, on both 4" and 8" models, for extremely low photo-visual periodic error and zero backlash. □ Ball bearings on both Declination and Polar Axes, permitting microsmooth tracking and precise balancing, even with the addition of auxiliary systems on the main telescope. □ On 8" models, an oversize 8.25" primary mirror, for a wider fully illuminated field, and to reduce the "edge darkening" of Schmidt-Cassegrains which use standard 8" diameter primaries. □ Multi-Coated Eyepieces, to maximize light transmission through the ocular lenses. □ A standard right-angle viewfinder on 8" telescopes, for comfortable object sighting, and yielding identical image orientation as in the main instrument in the normal observing mode.

Equatorial Wedge: Includes micrometric control knobs in both azimuth and latitude, for quick, precise telescopic orientation.

Field Tripod: Fully adjustable in height, for comfortable observing either in seated or standing positions. Probably the most rigid, fully portable tripod ever developed for astronomical telescopes.



Meade 8" Schmidt-Cassegrain Telescope, Model 2080, shown with 4" f/2.64 Schmidt Camera, Off-Axis Guider Assembly, Equatorial Wedge, Field Tripod.

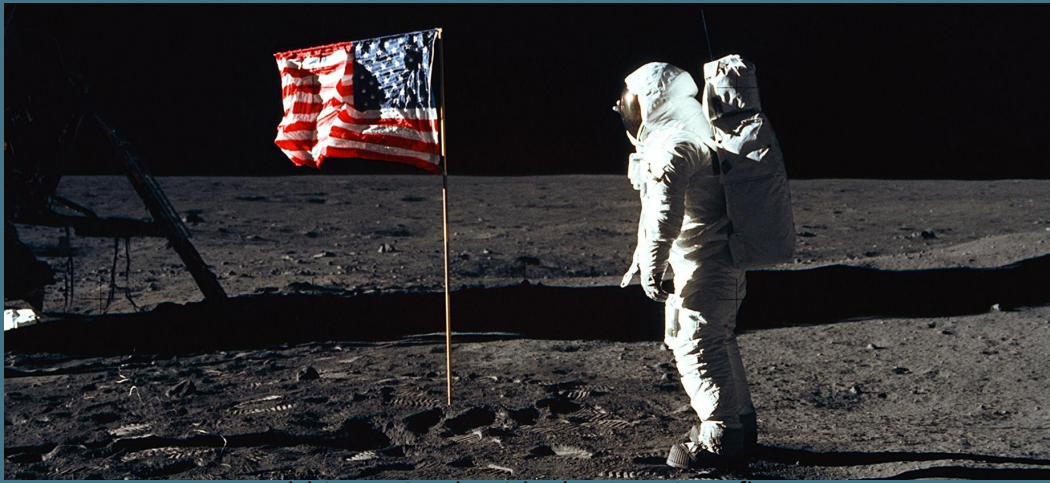


Model 2040, 4" Schmidt-Cassegrain Telescope, shown with Table Tripod.

4" Spotting Scope, Model 1022. Attaches to any standard camera tripod. Shown with optional Meade Photo Tripod.

Fifty years since humanity landed on the moon.

In the summer of 1969, Neil Armstrong and Edwin "Buzz" Aldrin made history when they became the first two men to walk on the moon. Along with command module pilot Michael Collins, Apollo 11 was an 8-day mission envisioned by President John F. Kennedy earlier in May of 1961. Armstrong and Aldrin spent 21 hours, 36 minutes on the moon's surface (NASA).



Aldrin posing beside the American flag.



PRIME CREW OF FIFTH MANNED APOLLO MISSION
NEIL A. ARMSTRONG MICHAEL COLLINS EDWIN E. ALDRIN, JR.

(left to right) Armstrong, Collins, and Aldrin.



Saturn V as it is launching on July 16, 1969.

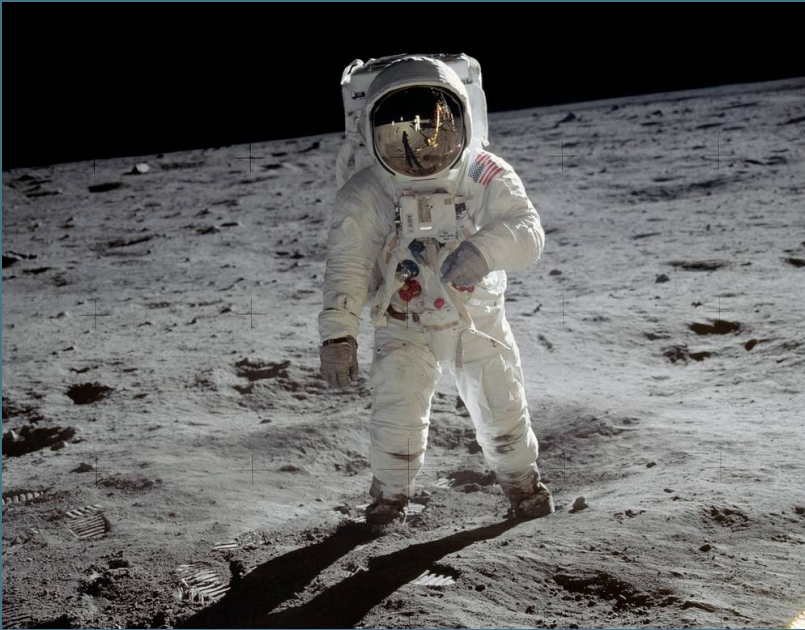
REMEMBERING APOLLO 11

On May 25, 1961, President John F. Kennedy delivered a speech to Congress which marked the beginning of the US' quest to conquer the moon (Space). Kennedy promised to put astronauts on the moon within the next 9 years. While Kennedy would be tragically assassinated two years later, his dream was not left unfulfilled, because on July 16, 1969, the crew of the Apollo 11 mission embarked on their legendary journey to the moon.

The crew is made up of Commander Neil Armstrong, Lunar Module Pilot Edwin "Buzz" Aldrin, Jr., and Command Module Pilot Michael Collins. At 9:32 am, July 16, 1969, the nearly 7 million-pound *Saturn V* (left) rocket ascended into the Earth's atmosphere and began the crew's flight to our cratered satellite (Britannica).

On the morning of July 20th, Aldrin and Armstrong left command module *Columbia* and entered lunar module *Eagle* to prepare for touchdown. Armstrong manually maneuvered the module into the Sea of Tranquility. Upon exiting *Eagle*, Armstrong exclaimed, "That's one small step for [a] man, one giant leap for mankind," having skipped over the "a" in the heat of the moment (Britannica).

While on the lunar surface, Aldrin and Armstrong filmed and photographed the lunar surface, measured the composition of solar wind, the exact distance between Earth and the Moon, and collected rock and



Aldrin poses for a photograph, taken by Armstrong, while Collins remains in orbit around the Moon.

BUZZ ALDRIN

Edwin Eugene Aldrin, Jr., born January 20, 1930, in New Jersey, served as Lunar Module Pilot for the Apollo 11 mission and was the second human being to walk on the moon.

Aldrin was educated at West Point and received pilot training from the US Air Force in 1951 (NASA History). He flew 66 combat missions in Korea, has a PhD in aeronautics from MIT and participated in NASA's *Gemini* program.

MICHAEL COLLINS

Michael Collins, born in Rome, Italy on October 30, 1930, grew up in Washington D.C. and received his bachelor in science from West Point.

Prior to working on Apollo 11, Collins participated in *Gemini X* and served as both a fighter pilot and experimental test pilot in California where he logged 4,200 hours of flight (NASA History).

NEIL ARMSTRONG

Neil Alden Armstrong was born on August 5, 1930 in Ohio and died on August 25, 2012 due to complications resulting from cardiovascular procedures. Armstrong was educated at Purdue University on a scholarship from the U.S. Navy and studied aeronautical engineering.

Additional to Apollo 11, Armstrong participated in the *Gemini VIII* mission. He held the position of Deputy Associate Administrator for Aeronautics, NASA Headquarters, Washington, D.C., in the early 1970s..

"THAT'S ONE SMALL STEP FOR A MAN, ONE GIANT LEAP FOR MANKIND."

COMMANDER NEIL ARMSTRONG



President Richard Nixon greeting the crew of Apollo 11 in quarantine aboard the USS Hornet.

HIGHLIGHTS SUMMER 1969

via The Robinson Library

05 MAY

16 Soviet Venera 5 reaches Venus

18 U.S. Apollo 10 stops 15 km short of lunar surface

24 The Beatles' "Get Back" reaches No. 1 on Billboard and remains there for 5 weeks

26 John Lennon and Yoko Ono begin their second "Bed-In" in protest of war

06 JUNE

2 Australian aircraft carrier *Melbourne* slices U.S. destroyer *Frank E. Evans* in half, killing 74

3 The last episode of *Star Trek* airs

12 American side of Niagara Falls is "shut down for maintenance"

21 *Explorer 41* launches

22 Judy Garland dies

28 *Biosatellite 3* launches with a pigtail monkey aboard to study the effect of zero gravity on the brain

Stonewall riots in NYC marks the beginning of LGBTQ rights movement

07 JULY

1 Charles, Prince of Wales and Earl of Chester, is invested with his title

3 Rolling Stones founder Brian Jones drowns

7 Canadian House of Commons recognizes French and English as official languages

8 First U.S. troop withdrawals in Vietnam

14 U.S.' \$500, \$1,000, \$5,000 and \$10,000 bills officially removed from circulation

15 *Luna 15* launches toward the Moon

16 *Apollo 11* launches towards the Moon

24 Muhammad Ali convicted of evading draft after refusing to be inducted into the U.S. Army

Apollo 11 crew returns to Earth

08 AUGUST

2 Rioting breaks out between Protestants and Roman Catholics in Belfast

5 Mariner 7 makes its closest fly-by of Mars

8 The Beatles take their iconic picture walking over a zebra crossing

USSR launches *Zond 7*

9-10 Manson murder spree

15 Woodstock begins, attendance of 400,000

17 Category 5 Hurricane Camille ravages Gulf Coast

18 Long John Silver's opens its first store

21 al-Aqsa mosque in Jerusalem damaged by fire

first Gap store opens

LOOKING TO THE FUTURE

via NBC News

What will 2019 bring to science?

"The Event Horizon Telescope will provide a map of the shadow of the event horizon...of the supermassive black hole at the center of our Milky Way galaxy."

— *priyamvada natarajan*
astrophysicist

"Prosthetic limbs will not only be controlled by a paralyzed patient's thoughts, but also be capable of sensing and feeling the same way our natural limbs do."

— *heather berlin*
cognitive neuroscientist

"Initial results from CRISPR-Cas genome editing clinical trials to treat blood disorders will generate excitement about the first cure for genetic disease."

— *jennifer doudna*
co-inventor of CRISPR-Cas

How to retain the internet's wonderful deluge of information while reducing its in-our-face presence? One solution is to change the nature of the screen... Next year will see more innovations that make technology less intrusive — a kind of screen detox."

— *carlo ratti*
architect and engineer

WORKS CITED

Text

NASA. "Apollo 11 Mission Overview." Web.

<https://www.nasa.gov/mission_pages/apollo/missions/apollo11.html>

Space. "May 25, 1961: JFK's Moon Shot Speech to Congress." May 25, 2011. Web.

<<https://www.space.com/11772-president-kennedy-historic-speech-moon-space.html>>

Britannica. "Apollo 11: United States Spaceflight." Encyclopedia Britannica. December 10, 2018.

<<https://www.britannica.com/topic/Apollo-11>>

NASA History. "Biographies of Apollo 11 Astronauts." Web.

<<https://history.nasa.gov/ap11ann/astrobios.htm#top>>

The Robinson Library. "Chronology of Major Events in 1969." April 11, 2018. Web.

<<http://www.robinsonlibrary.com/general/reference/intheyear/1969/chronology2.htm>>

NBC News. "19 bold predictions for science and technology in 2019." December 27, 2018. Web.

<<https://www.nbcnews.com/mach/science/19-bold-predictions-science-technology-2019-ncna950076>>

Images

"Hubble's 28th Birthday Picture: The Lagoon Nebula." ESA/Hubble Space Telescope. 12-18 February, 2018. Web.

<<https://www.spacetelescope.org/images/heic1808a/>>

"Meade LX Ads." Deep Skies. Web.

<https://deepskies.com/Meade_LX_Ads.aspx>

NASA. "Apollo 11 Image Gallery." Web.

<<https://www.nasa.gov/apollo11-gallery>>