

HORIZONS

A publication of the Massachusetts Air and Space Museum

The Massachusetts Air and Space Museum inspires new generations to explore, experience, and pursue interests and opportunities in science and technology.

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SPACE: *The Final Frontier*

When Dr. Robert Goddard began experimenting with liquid-fueled rockets it's unlikely that he

fully envisioned just how far his inventiveness

would take man

as he expanded

his reach toward

and into the

heavens. While

his 1914 patent

for a multi-stage,

liquid-fueled

rocket became

the foundation of

all modern rock-

etry, he himself

didn't launch his first rocket until 1926. Over the next

two decades, Goddard and his team manage to reach

altitudes of over a mile and half, and speeds that far

exceeded the sound barrier.

In the century since Goddard's first primitive rocket launch, man has capitalized on his science by

sending men

and women

into circum-

terrestrial

space. Men

have walked

upon our near-

est neighbor in

the Cosmos,

the Moon, and

have thrived

for long periods

in Skylab and

the Interna-

tional Space

Station. Space travel is now evolving into commercial

ventures that will soon allow anyone to partake of a

unique and exciting ride. But despite all the techno-



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logical and commercial advances that have catapulted unmanned probes to the edge of our solar system and beyond, man himself has yet to escape the gravitational pull of Earth.

During the manned space program of the 1960s and 1970s, technology was nowhere near what it is today. Although we can draw a direct line from the manned space program to much of modern technology, what lies ahead may answer questions that man has yet to even ask.

Slated for launch and deployment in 2018 is the [James Webb Space Telescope](#) from [Northrup Grumman](#) and [NASA](#). This complex system will be deployed a million kilometers from us and rest above the Earth's orbit in the sun's shadow in a region known as a **La Grange point**. These points in space are considered parking places because they offer some unique properties. This particular point (*L2 in the diagram*) is in specific relation to the gravitational pull of both the Moon and the Earth, allowing the James Webb telescope the ability to more or less hover there in the darkness of space, capturing images that the Hubble Space Telescope could never envision.

While answers to long-sought-after questions about the origins of man and the universe may soon be forthcoming thanks to the Webb telescope, the manned-space program taught us that true understanding for human beings comes only when one of their species experiences something firsthand and is able to report his or her findings to their fellow man.

When, then, can we expect to acquire a report on the experience of escaping Earth's gravity completely and traveling through the black void that is interplanetary space?

NASA announced in 2011 their development of the Orion MPCV (multi-purpose crew vehicle) that will be used for missions in low-earth orbit, and eventually for a manned mission to Mars, our nearest neighboring planet. Crews are not projected to start going aloft until 2023.

While NASA readies itself for the beckoning demands of another manned space program, there are critics who claim that the vast sums of money that it will take for man to truly conquer gravity and escape to other worlds could be

better spent on other aspects of NASA's designed

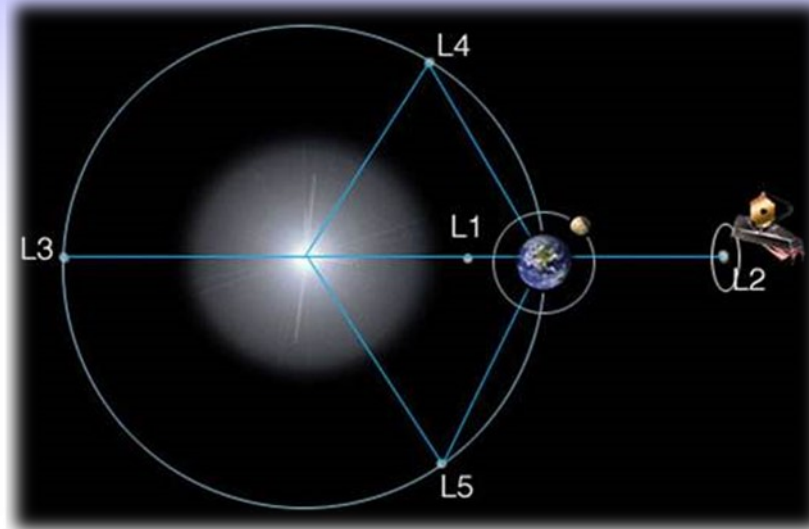
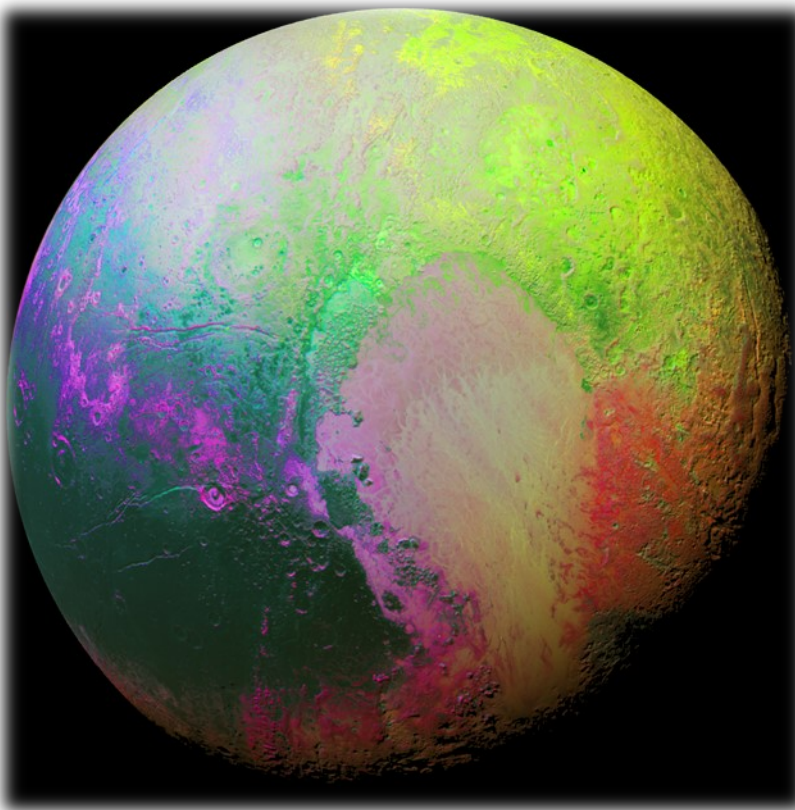


Illustration of La Grange Points



NASA's recent photo of the planet Pluto

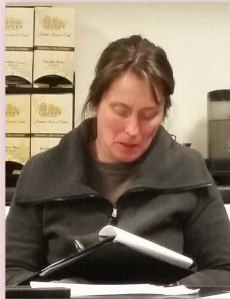
What's Happening at

MASM

The Women of MASM

Shannon Brown

In the most recent edition of *Horizons*, the record of one lady who is integral to the success of MASM was



Shannon Brown

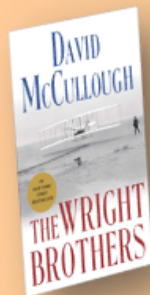
omitted. Shannon Brown serves as secretary to the board of directors and is the vital cog that keeps the machinery of the organization turning. She attends all the board meetings and quietly documents all that transpires in order to preserve the history of evolution of the museum as it unfolds. It is an awesome responsibility that requires a level of dedication and attention to detail that transcend that of the average person.

Shannon is also dedicated to her other life; that of wife and mother. How she balances everything she does challenges the imagination, but MASM is thankful for her fidelity and for her extensive efforts on behalf of the museum. ➔

SAVE THE DATE

May 14, 2016

**Best-Selling Author
David McCullough**



The Wright Brothers

Please join the Massachusetts Air And Space Museum on May 14, 2016 at the Framingham Town Hall, 150 Concord St. Framingham, MA at 9:30 AM for a presentation and book signing by prize winning author David McCullough. Mr. McCullough will be talking about his book The Wright Brothers in support of the Town's honoring of Astronaut Christa McAuliffe. MASM will have a display at the event and starting a few weeks later will present a display at the Christa McAuliffe Branch Library, 746 Water St. Framingham, MA. ⚡

MASM Elects New President



Robert Segal has been elected the new president of the Massachusetts Air and Space Museum. Bob brings to the table a wealth of museum experience, including his work with the [Boston Public Library](#), the [USS Constitution Museum](#), the [Peabody Essex Museum](#), and his own company, [Segaldesign](#). His expertise in exhibiting art and artifacts in the best light possible is a polished talent that is crucial to the future success of MASM.

Bob is assuming the mantle of leadership at a crucial time. Coordinating the educational programs offered by MASM while simultaneously trying to develop the new site for the museum is a daunting challenge. In addition, he is the point person for the fundraising efforts that are needed before the museum can break ground of a permanent home at Hanscom Field. If anyone is up to these tasks, it's Bob! ➔

purpose. The first A in NASA's name stands for "atmospheric," and many feel that NASA needs to focus more attention on this aspect of its mission in wake of global climate change. While NASA's UARS (Upper Atmosphere Research Satellite) collected excellent data during its fifteen-year life span, it was focused primarily on Earth's upper atmosphere. Although this may help us better understand the evolution of planets in the cosmos, we need a reminder that we reside at the very bottom of that atmosphere, and it is here that detailed studies need to be compiled along with the plethora of data already collected in order to bring about contemplative solutions to recognized problems.

Despite the enormous expense, both financial and political, man will continue to venture further and further into space because it is part of man's essence to explore. Venturing to ever-distant destinations has been the hallmark of human progress from the beginning of recorded time, and reaching new heights, figuratively and literally, will continue as long as man can envision what is currently beyond his reach.

A trip to Mars was once believed to be a fairy

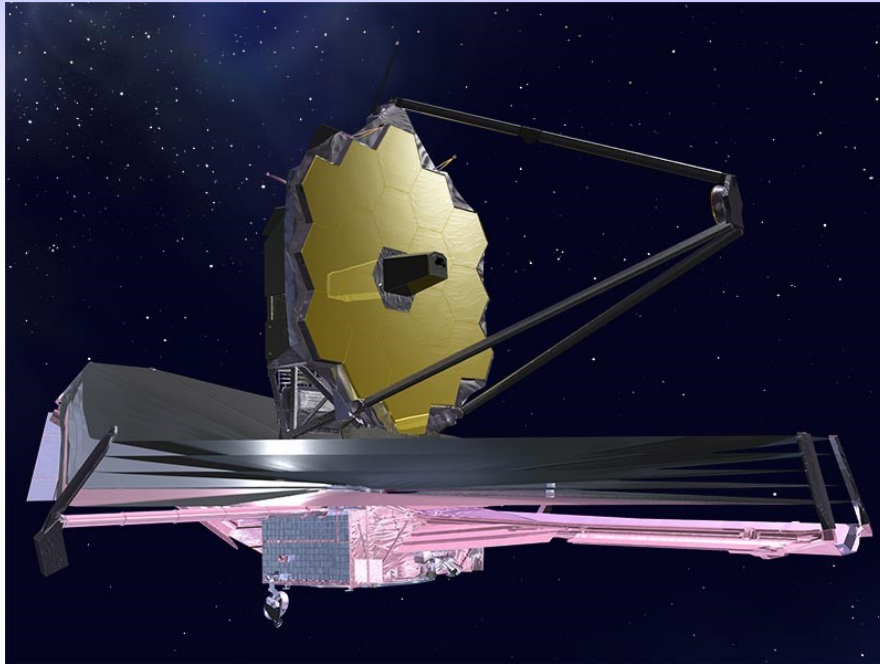
tale, or the dream of the addle-brained. But NASA is presently preparing for a manned mission to the red planet as early as 2030. The Orion Spacecraft is currently undergoing beta

testing in order to come up with a final design that will carry four astronauts to our second-nearest neighboring planet. Venus, although closer to earth than Mars, offers only a toxic environment of carbon dioxide, nitrogen and clouds of sulfuric acid; hardly fit for human existence. Because of this atmosphere, Venus is the hottest planet

in the solar system, despite Mercury being some 37 million miles closer to the sun. Mars offers only 1% of the atmosphere here on Earth, but little of the toxic elements found on Venus.

The trick is being able to get there. Unlike the Moon missions of the late 1960's and early 70's, the Mars venture will require that astronauts be able to survive the six months it will

take to get there, the time they spend on the planet, and the ability to return safely to Earth. The life-support systems for that extensive a trip alone are among the enormous challenges facing NASA. But NASA and its supporters are hopeful that the near future will bring renewed interest in the exploration of space.➔



James Webb Space Telescope



Orion Multi-Purpose Crew Vehicle (MPCV)



Out and About



World Premier of Feature Film “Flying Again”

The [Charles River Museum of Industry and Innovation](#) played host to MASM’s gala event that was highlighted by premier of Mzeroa Films feature film “Flying Again.” Showing of the film was preceded by a cocktail hour and an opportunity for guests to wander the CRMII exhibits and enjoy the rich history that is contained within. The museum is located along the



Charles River in Waltham and offers visitors a glimpse at many of the creative inventions and technologies that were developed and brought to life in Massachusetts. From gasoline pumps to intricate time pieces, the Bay State has been a leader in technological innovation from the very beginning.



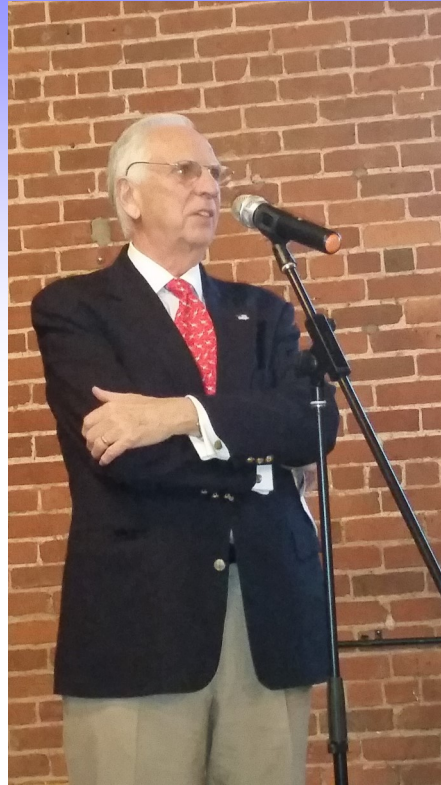
Amidst the many items on display was the temporary traveling exhibit

Continued on Page 6

from the [Massachusetts Air and Space Museum](#). The CRMII recognizes the vast and ingenious wealth of innovations that evolved right here in Massachusetts, and remain steadfastly supportive of the efforts of MASM to bring these technologies to the forefront.



MASM volunteer Keith Young served as the master-of-ceremonies for the evening and introduced



film came to be, and explained that it will be opening in commercial venues in the near future.

In addition to the breathtaking aerial footage taken from and of a number of aircraft in flight, “Flying Again” contains a collection of interviews from pilots who had been away from flying for some time, but decided to refresh their abilities and get back in the air. Schappert offers

training to lapsed pilots in order to bring their flying skills back up to date with the latest technologies



both the MASM president Joe Dini, but the filmmaker himself, [Jason Schappert](#). Jason explained how the

available. His training is also a wonderful opportunity



for pilots to brush up on their skills and become proficient once again at something that all real pilots love: flying. Over time, the world grows more complex, and this is true within the field of aviation. Having someone like Jason Schappert to help explain the complex changes that have occurred in aviation is a fantastic way to catch up with all the changes that have taken place in aviation.

In addition to the premier of the film and the comments offered by speakers, a silent auction that

included scores of aviation-related memorabilia was offered. The auction was coordinated by museum volunteer Barbara Jagla and netted the museum some much-needed donations. The auction also provided high bidders with some choice items to take home.

Supporting the efforts of MASM at this premier event was a crowd of MASM members and friends that turned out. Among them were many pilots, past and present, who helped share their own stories of flight and add to the rich tapestry that is Massachusetts aviation history.→



MASSACHUSETTS AIR AND SPACE MUSEUM

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[Horizons](#) is a production of [Berkshire Cottage, LLC](#) PO Box 159 Brookline, NH 03033 for the Massachusetts Air and Space Museum

Join Us Today!

The Massachusetts Air and Space Museum will soon come to life in Bedford, Massachusetts at historic Hanscom Field. Your help is needed to turn this vision into reality. Send your tax-deductible contribution to:

Massachusetts Air and Space Museum 200 Hanscom Drive Bedford, Massachusetts 01730.

Complete the form below and include it with your contribution to get on our mailing list. Your donation of \$25.00 or more will automatically enroll you as a Member of MASM with the benefits as outlined on our web site. You will receive our electronic newsletter "Horizons" which will be emailed to friends of the museum free of charge. This publication is informative and interactive, and online you will find links that will connect

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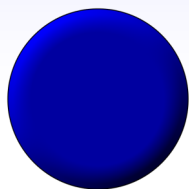
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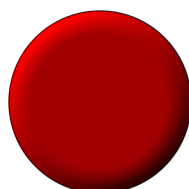


Video Page

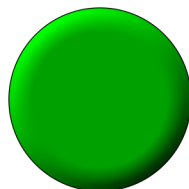
Be sure to click on the astronaut



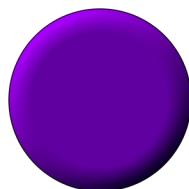
US NAVY BLUE ANGELS 360°



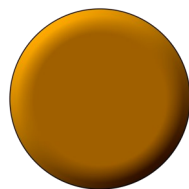
Air France 747 Goodbye



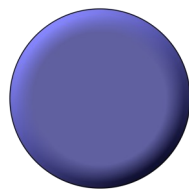
Seeing Beyond—James Webb Space Telescope



James Webb Space Telescope Deployment



Yankee Air Museum—Willow Run Facility



Boeing 787-9 Dreamliner Take Off

Have you discovered the secret to our newsletter *Horizons* yet? Not only are video links included here on the video page, behind almost every photograph on-line readers will also find valuable links to other interesting sites. Some are video links; some are in-depth information sites. Here at *Horizons*, there's more in store for you than just what's on top. *Go exploring today!*