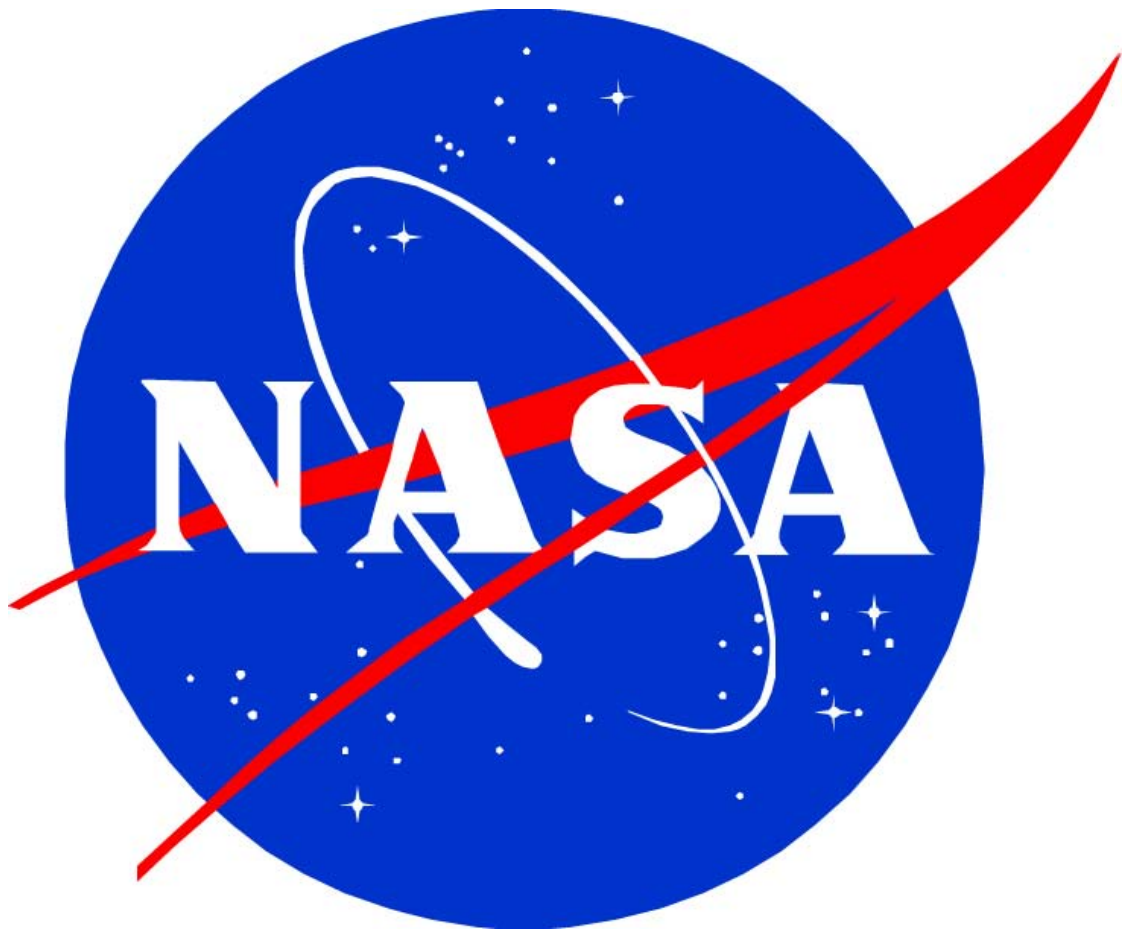


¿How did it all start?

Space Race 2



(Carlos Gonzalez. Former Operations Manager at MDSCC)

Brief essay review about the Start of the Space Race. Project Apollo

**(Unofficial anecdotes, aisle rumors,
unpublished facts, etc.)**

- 1. APOLLO**
- 2. GENERAL ISSUES**

As in previous essays, this one is dedicated to my wife, Estrella, and my daughters, Raquel and Sara, that have been able to cope with me (something it would be difficult even without writing) while I was busy compiling existing information with my own memories.

I want to give a special mention to my friend, Luis Miguel Platero, who actually pushed me into initiating this adventure.

Foreword

After finishing "Space Race 1" I have attacked this second part. (Finishing? It is difficult to finish something when only the outer layers have been scratched).

I thought the whole thing would be 20 pages at the most and my predictions were short again. As I wrote, I remembered a lot of things I thought I had forgotten or that were in the far corners of my memory, but they came front pulled by the remembrance of other events.

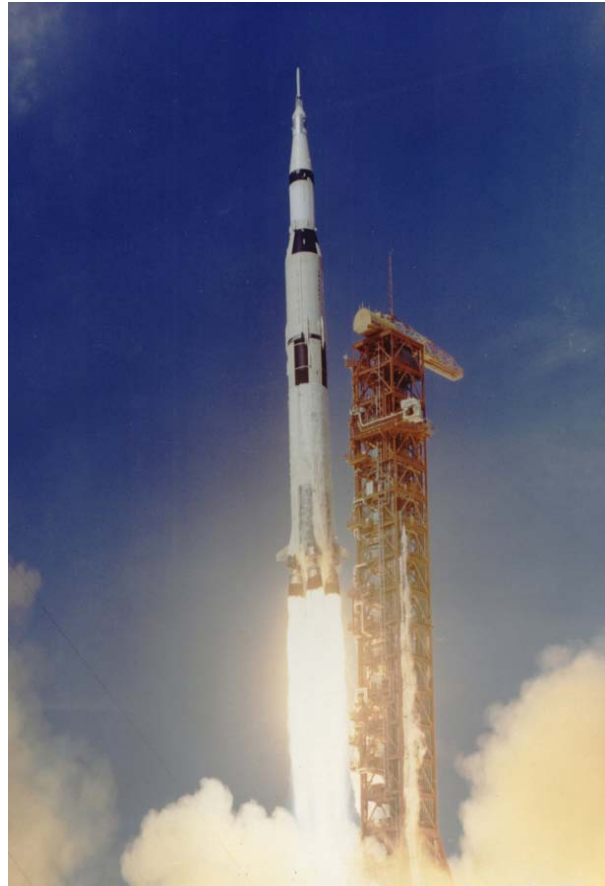
I start now with the Apollo Project and I must confess that the amount of things I have to tell you weaken my disposition.

I'll get to it, of course, but you'll have to wait a little longer than anticipated.

Obviously, as in my previous essays, nothing written here has been taken from official publications or has been endorsed from any official organization and it is only aisle rumors and things heard here and there for which I am the only responsible.

In my previous essay I thanked my friend Luis Miguel Platero for his inspiration and encouragement. Now, I'm not so sure anymore.

All photographs depicted in this essay are from public Internet publications and, in no way, they will be used to collect any income.



1. Apollo

FINALLY.....Project Apollo was the American response to the USSR's supremacy in space. But it was not easy as, up to 1966, the Soviets had a technology clearly ahead of the Americans in high power launchers, and their N 1 was almost ready to take a cosmonaut to the Moon before the USA.

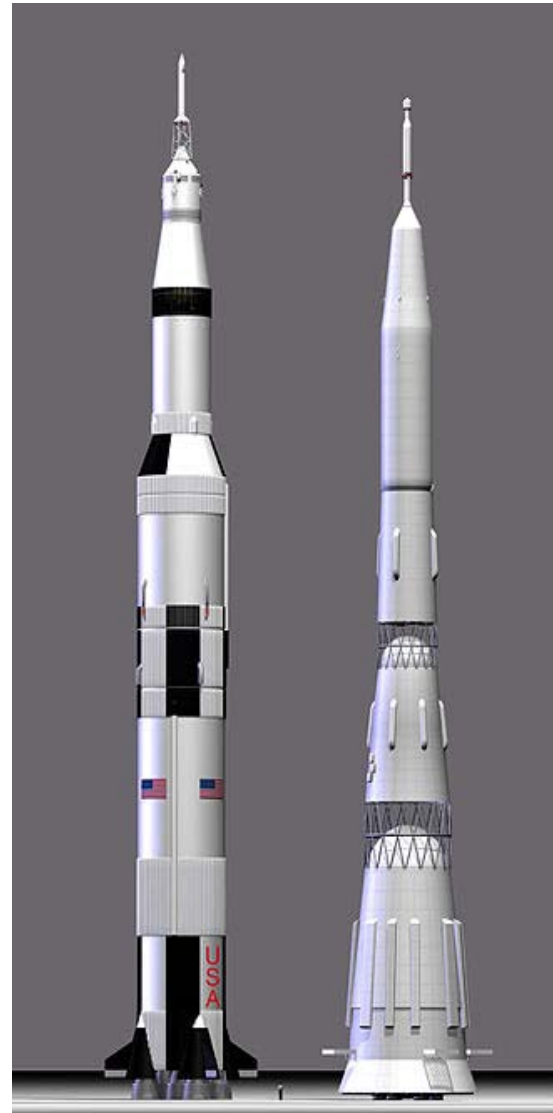
Curious fact. Sergei Korolev went through a surgery intervention in 1966 and passed away while in the surgery room. The intervention was listed as being of low risk but.....

His team was not able to finish the design and development and, after a few failures at attempting an N 1 launch, they gave up.

Road was clear, no obstacles, being the winner was easy now, but there were only four years left to comply with President's Kennedy commitment and urgency.....

Apollo 1 had been assigned to be the first manned flight and it had been planned to rendezvous with the last Gemini (XII) while in orbit, but last minute problems delayed the launch. Also, this mission turned to become one of the greatest tragedies of the

American response to the USSR's



American Space Program.



I reaffirm in that urgency.....When North American sent space capsule CM-012 to the Kennedy Space Center in August 26th, 1966, there were 113 significant engineering changes planned, and, after delivery, another 623 requirements for engineering changes were generated. Grissom felt so frustrated with the lack of capacity of the simulator training engineers to emulate these changes that took a lemon from a tree he had in his house

and hanged it from the simulator. (1).

- (1) Clear reference to Peter, Paul and Mary's song "Lemon tree"
*Lemon tree very pretty and the lemon flower is sweet
But the fruit of the poor lemon is **impossible to eat.***

During a simulation while in the launch platform, a fire originated by a spark in a bad isolated cable, took the lives of three astronauts who had complained about the inflammable material inside the capsule several times. The analysis and necessary corrections of the Command Module after this incident delayed the Project for 20 months and the first manned flight until Apollo VII.

We must give appropriate tribute to the three dead astronauts: *GRISSON, WHITE II* and *CHAFEE*. Their dead is the fee we must pay for the human desire to reach higher goals in mankind knowledge and, probably, saved the lives of the crew of Apollo XIII due to the improvements included into the Command Module.

Apollo's II and III were scratched and IV through VI were unmanned. Manned flights started with Apollo VII.

During this mission, and probably, because the living space inside the capsule was greater than in the Mercury or Gemini, the crew had more dizziness and nausea than in previous flights and that made the capsule to ground relationship very tense.

The crew, aware they could do practically anything they wanted, didn't obey Control's instructions and did as they pleased. It is logical, thereof, that they never flew in other mission.



In the mean while, the design and development of the Lunar Module had its own problems and delays. Grumman was trying to cope with the frequent NASA requests to reduce weight so it came to the point that the original panoramic windows were scrubbed and only two triangular windows that were supposedly enough to see the landing area were kept. Also, seats were eliminated as well as the redundant latch device for the Command Module thus leaving the latching operations to the CM pilot alone.

Curious note. The original design was composed of a single vehicle that would descent and return to orbit without leaving anything behind. NASA thought of something lighter and the whole design was reviewed and changed.

Another. Module's original name was *LEM* (Lunar Excursion Module) but it was changed to *LM* (Lunar Module) per decision of George Low (Chief of Apollo Vehicle Program) as "Excursion" implied some kind of a frivolous note.

Finally, the module was ready but, of course, with a ten month delay.....But that was better than nothing. Now it was time to test that it worked so, when Grumman delivered the first LM, NASA decided to test the descent engine by taking the LM up to about 10 km high and make it land. Grumman told them that it was not feasible as the engine had been design and developed for lunar gravity (1/6 of Earth's gravity) and it would crash.

NASA then, decided to test the legs' shock absorbers by letting the LM fall to ground from a height of 1.7 m. Grumman, again, told them that legs would break as they were designed for lunar gravity.

OK. What about the engines? Grumman told them they could test the thrust in a test bench, and when they did it, they found the thrust was appropriate but the nozzles had practically disappeared. NASA, obviously asked, and the answer: You told us to reduce weight, so we made the nozzles of an ultra light alloy, and that together with a very abrasive fuel makes them to melt with use. Final result.....Astronauts went to the Moon with descent and ascent motors "NEW" and "NEVER TESTED".

OK.....Apollo VIII marks the beginning of a new era. A manned trip to the Moon and back. NASA picks up the dates so that Christmas finds the astronauts circling our satellite. This generated a flow of affection from the tax payer (who was actually paying for all of these).

The famous Earth rising over the Moon's horizon was taken during this mission. Later missions also took this type of picture.



The next curious fact is from Apollo X. This was the first, of only two missions, with a full crew of veterans. Stafford had flown Gemini 6 and 9, Young had flown Gemini 3 and 10, and Cernan had flown Gemini 9 with Stafford.

They were also the only crew to flight in subsequent Apollo missions: Stafford was Commander in the Apollo-Soyuz, (*ASTP*), Young was Commander in the Apollo XVI and Cernan was Commander in the Apollo XVII

The Apollo X crew has the record of being the humans that have traveled farther from home, 408,950 km.

The Apollo X can be considered as a “dress rehearsal” for the Apollo XI. The LM actually practiced the descent and got to only 15.6 km from the lunar surface. Obviously, NASA had made sure they would not land by loading less than the needed fuel to do it in case the astronauts decided to try.



The names that the astronauts gave to the capsules were: Snoopy and Charlie Brown.

NASA asked the astronauts to assign more serious names for their subsequent missions.

Curious fact. Even though NASA disapproved the names assigned, Snoopy became the official mascot of the manned flights and a “Silver Snoopy” was an award given to those who had made a significant contribution to a given mission.

AND IT FINALLY CAME.....The moment so long waited for, and almost with no margin left to fulfill the wishes of the late President Kennedy. Apollo XI was launched to place a man onto the Moon and bring him back safely to Earth.

As it couldn't be any other way, landing was not free of difficulties. First, the astronauts entered the LM, turned on all equipment and verified everything was, apparently, OK. Then, they closed the hatch and unlatched from the CM while its pilot (Collins) verified that the general aspect of the LM looked normal (no signs of structural damage) and the landing maneuver started.

Curious fact. The whole landing maneuver of the Eagle was followed and controlled from the Goldstone (Ca.) Tracking Station antennas with Madrid (Fresnedillas and Robledo) as backup while the control of the Columbia was on Madrid with Goldstone as backup. The exit from the LM and stepping onto the Moon took place after a few hours due, mainly, to hourly coverage in the USA.



Another one. The names given to the capsules were:

1. The LM was “Eagle”, as a tribute to USA’s emblem.
2. The CM was “Columbia” as a tribute to “Columbiad”, the Moon capsule in Jules Verne’s *Trip to the Moon*.

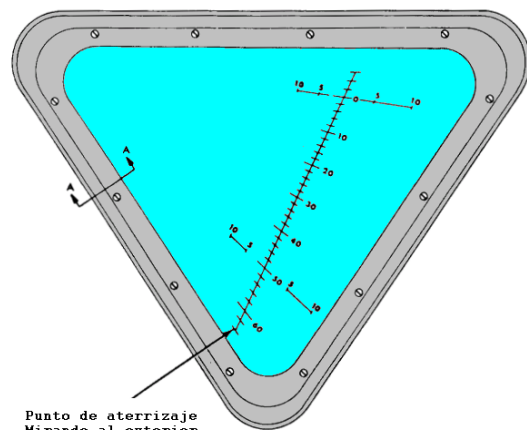
And landing started.....First thing was to maneuver the LM to obtain the adequate angle trajectory and the braking motor was ignited. Communications with Control were crucial but the LM incorporated a high gain automatic antenna, and the first thing that happened was that communications failed.

WHAT THE.....An automatic high gain antenna, a state of the art in communications technology and.....it failed? Obviously, the antenna was not failing. It usually takes a human being to make really important errors and in this case the masking introduced into the antenna's processor was wrong and the LM itself was interfering with the signal.

The rest of the landing sequence went by among manual antenna operations performed by Aldrin and using the Columbia as a relay. But, certainly, that was not going to abort the mission.

OK. Problem had, more or less, been taken care of but.....SHL.....the programmed marks were going by four seconds in advance and that meant a landing of, at least, 6 km. further than expected.

Fact. The LM windows were a wonder of inventive and design. In the inside and outside glasses, engraved markings much like "crosshairs" helped the pilot find surface marks thus knowing whether landing was adequate. He had to align both markings with a ground mark and, with the help of the onboard computer find if they were passing the ground mark in the right moment.



Another. They were not made out of normal glass, the outer was VYCOR 7913, a composition made out of 96% of silica which made it useful up to temperatures of 900° C, and the inner was CHEMCOR 0312, also called "Gorilla Glass". Obviously, they both had several layers of compounds to reduce radiation, condensation, refraction, distortion and several other things ending in "tion".

And then the alarms 1202 and 1201 started. The description was so vague that Armstrong had to ask Houston Control what they should do, especially because the alarms came together with a red flashing light engraved with the words: "Master Alarm". Houston Control assured them that everything was OK and that they were GO for landing. Armstrong was decided to land no matter what, so the accumulation of all of these "small" problems made him to change the capsule to manual control and land it himself.

Fact. Neil stepped onto the Moon with the left foot, but his was not casual. The US Postal Service asked Paul Calle to design a postal stamp commemorating the arrival of men onto the Moon.



Paul Calle designed it and more than 152 million stamps were ready to be released. Then, three days before launch, Calle thought: what would it happen if the astronaut stepping onto the Moon did it with the right foot?

Paul took the first flight to Washington and, after talking with NASA management, he got permission to talk with the astronauts during their last breakfast in Earth prior to launch. It was clear....."I don't care who steps onto the Moon first, but whoever does, PLEASE do it with the left foot".

Fact. All of the persons that had the luck to see Neil Armstrong go down the LM steps the night of the 20th to the 21st of July, 1969, noted two things:

1. The descent was anything but gracious, Neil jumped from one step to the next as if he was blind and it was actually was has happening.
2. TV was very bad. (This, somehow, eliminated the possibility of a fraud).

More. The reason for the oddly descent was due to the Extra Vehicular Garment that had to be used to jump onto the Moon. This suit was very cumbersome and it included a photographic camera attached to the chest. Neil just couldn't see below him and jumped from one step to the next guessing where it was. The last step was extremely long as the lower part of the LM legs had the shock absorbers and they needed some extra room with no obstacles. The last jump placed Neil onto a cup shaped surface which was the landing point of support of the legs. And from there.....To the Moon.

A little more. The Moon suit was composed of eleven layers that covered, among others, the following necessities: Temperature control, UV protection, radiation control and micro-meteoroids control.

Just a little more. Why were the TV images so bad? The camera attached to a leg of the LM that was focused on Neil's descent was "Slow Scan TV" (low resolution). The images received were displayed in an especial monitor that was not compatible with commercial TV. Fix?....use a normal TV camera (studio) and grab the images from the especial monitor with a tremendous loss of quality. Moreover, this camera produced NTSC signals that had to be converted to PAL to send them to Europe with an extra loss of quality. I don't want to be picky (well, may be a little) but at the Stations we had a slow scan TV monitor and saw it a lot better.

Fact. President Nixon had a letter prepared to be read to the Nation in the case of a fatality with Apollo XI. It had been written by Bill Safire (President's writer of the media interventions of the President).

To : H. R. Haldeman

From: Bill Safire

July 18, 1969.

IN EVENT OF MOON DISASTER:

Fate has ordained that the men who went to the moon to explore in peace will stay on the moon to rest in peace.

These brave men, Neil Armstrong and Edwin Aldrin, know that there is no hope for their recovery. But they also know that there is hope for mankind in their sacrifice.

These two men are laying down their lives in mankind's most noble goal: the search for truth and understanding.

They will be mourned by their families and friends; they will be mourned by their nation; they will be mourned by the people of the world; they will be mourned by a Mother Earth that dared send two of her sons into the unknown.

In their exploration, they stirred the people of the world to feel as one; in their sacrifice, they bind more tightly the brotherhood of man.

In ancient days, men looked at stars and saw their heroes in the constellations. In modern times, we do much the same, but our heroes are epic men of flesh and blood.

Curious. Astronauts had to go through a quarantine to make sure they were not bringing any pathogens back. Capsule was cleaned inside and outside and the marines gave them especial suits to be worn at all times. Probably, the outside of the capsule was clean due to the extreme heat supported during reentry but to give the suits to the astronauts and clean the inside of the capsule they had to open the hatch. And the pathogens.....??????

NASA was extremely strict regarding the objects that were not part of the mission and that were carried by the astronauts due to different reasons. Nevertheless, something or other always escaped their surveillance and astronauts carried envelopes, pictures and several other things.

Fact. In the Apollo XIV mission, Shepard, who was a golfer, thought that hitting a golf ball while in the Moon would probably make him go into the Guinness book of records. In absolute secrecy, he managed to get a foldable iron 6 made with the appropriate size so that it would fit into the box of an experiment they were taking to the Moon. He also thought of taking two golf balls to make sure he had a buckup.



He knew that he would not be able to use both hands with the lunar suit on, so he trained himself, wearing a lunar outfit, to hit the ball single handed.

Sneaking the club was easy. I don't know what he did with the two balls and I leave to the reader's imagination the answer.

Once in the Moon, he miss the first hit and the ball only travelled for about 40 m. he then concentrated and the second hit was good and on Shepard's words: *It flew for miles and miles.* Upon returning home, he donated the club to the US Golf Association (USGA) at Palmer Center in Far Hills N. J. The Smithsonian claimed its property as it had flown in a federal ship and it was, for that matter, federal property. They finally accepted a replica.

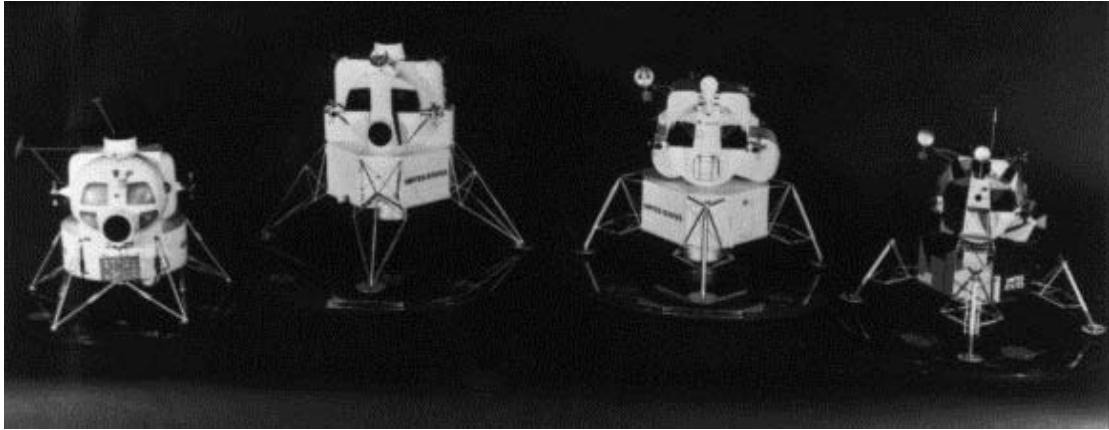
In the Apollo XV, the astronauts took with them 400 not authorized envelopes (actually 398 as two of them got damaged) per the request of a German philatelist who promised them 7,000\$ each. Along with these there were another 243 authorized by NASA to commemorate the mission.



NASA used to reprimand these actions severely but, were they going to lay off the whole astronaut crews while at the peak of their careers and when NASA was at the peak of its Space Race winning?

2. General issues

1. The LM was an extraordinary delicate vehicle. Grumman had followed NASA's instructions towards weight reduction so strictly that any hit, vibration or physical event out of the ordinary would damage it.



During the design phase, it is obvious how the appearance slowly changed in favor of a lower weight.

Not only the engine nozzles auto-destroyed themselves when ignition took place, or that the legs would break in a higher than lunar gravity. All of its conception had been designed for absence of atmosphere and low gravity so the walls were extremely thin (I heard they were the equivalent of putting together four layers of aluminum foil.....Unbelievable?).

During launch, (about a minute and a half after takeoff) the acceleration got up to 4 to 4½ Gs and vibration was at a maximum. To protect the LM, it was placed inside a conic like enclosure on top of the third stage. After trans-lunar injection (TLI), the CM separated from the outfit, doors of the enclosure were ejected, CM turned around, ensemble with the LM and extracted it to continue the trip towards the Moon without the rest of the vehicle.

2. NASA, after exhaustive tests including vibration, temperature, pressure and several others that I don't remember, had adopted the Omega Speedmaster as the official Administration watch. As matter of fact, a Speedmaster was the first wrist watch in the Moon. It was so accurate that it was used as a chronograph to calculate the parameters for the reentry during the Apollo XIII. NASA gave Omega a Silver Snoopy. However, the astronauts were seen in multiple occasions, be it in person on a conference or in pictures in the magazines, wearing Rolex, even during actual missions. I suppose that you understand the controversy this issue arose and I don't know whether NASA took any action to solve it.
3. Logically, the astronauts did not have a life insurance. What insurance company would dare to assume it? Moreover, and to make things more

difficult, the pay they were getting had not had an increase for being astronauts. It was the same they had as test pilots. So they had to invent something to protect their families in case of a fatality. Most of them, signed thousands of autographs that the family kept to be sold as collectors items or at auctions; some sneaked objects (strictly prohibited) like envelopes, pens, etc. when going in a mission and sold them after mission was over much like the autographs. These strategies remind us of some fiction movies or books. Only, in this case they were real.



4. The plaque that was taken to the Moon by Apollo XI was engraved with the following quotation:

*HERE MEN FROM THE PLANET EARTH
FIRST SET FOOT UPON THE MOON
JULY 1969, A. D.
WE CAME IN PEACE FOR ALL MANKIND*

Underneath were the signatures of Neil Armstrong, Buzz Aldrin, Michael Collins and President Nixon. The phrase: *“we came in peace for all mankind”* was derived from the declaration of intentions and politics of the National Aeronautics and Space Act (NASA) in 1958.

Taking the above into consideration, isn't it peculiar that nobody thought of planting a UN flag side by side to the US flag?

I think that many of the anecdotes and aisle rumors cited here had already been written in my first essay but some are new and I wanted to share them with you. I hope you have had as a good time reading them as I had writing them. Thanks.