



Ladies Foundations are the Foundations of Aviation and Space

Long Island Early Fliers Club, Inc.

September, October 2018 Newsletter

Editor: Fred Coste Volume 3, Issue 5

Editor's Note:

I have two theories on the principles of life. They are: 1). Life is about context; 2). All of life is a time – distance problem. I'm going to focus on the first one in this issue because it is a simple principal that often escapes ones presence of mind, despite holding sometimes obvious answers. The photos above are a good example!

Several years ago I served as an integral part of a high school aviation program offering students an opportunity to graduate with a private pilot's license. Each October the school held Open School Night, during which mom and dad could listen to the presentation and ask questions about what their kids were learning. As part of the talk, I explained that the kids should come to the airport dressed appropriately based upon the weather, time of day, and time of yearespecially, when we moved into the cross country phase of training. I proceeded to explain that if the plane lost engine power over a hostile terrain, there might be a need to land off airport and survive comfortably while awaiting help. Sandals, slippers, wearing shorts in the winter would be unacceptable; resulting in their little darling being sent home without having the flying lesson.

At one such presentation during the Iraq War, a very upset mom stood up and yelled out where the hell are you planning to take our kids that have this hostility toward them? Doing my best to contain my laughter, I explained that ditching in a body of water, having to put the plane down in a desolate field or on a roadway, anyplace away from an airport, would be

considered a hostile place to try to land and appropriate dress was required. This mom had trouble understanding the context of what I was trying to explain.

Aviation has many situations during which *context* is important; from dealing with a frozen pitot tube to understanding what the airplane is doing in instrument conditions, to the by-products of ladies underwear! Yes, you read that correctly!

Most people talk about the impact of the of the aerospace industry bringing forth new products that become mainstream in the context of American culture; like microwave ovens and cell phones. What about American culture answering some of the challenges of the aerospace industry as it faced the need to survive in increasingly hostile environs? Things like stockings, girdles and bras held the answer.....no pun intended!



Legend has it that the first parachute jump was performed about 4000 years ago when Chinese emperor, Shun ran away from his

father who was thought to have wanted to kill him. Shun ran into a tall building to escape the wrath of dear old dad and soon found out he had nowhere to go. In a move that would only inspire Jackie Chan, Shun grabbed two bamboo hats and jumped from the roof, gliding to safety.



Leonardo da Vinci actually designed a more practical parachute in some of his writings published in 1485. This design had a square frame to hold it open with a pyramid shaped canopy to capture the air. This concept was actually tested successfully in 2000 and again in 2008 by a Swiss skydiver who was released from under a hot air balloon. It was proven successful both times.

However, it wasn't until World War I that the parachute truly came of age. Observers in gondolas that hung under balloons were the first to start jumping regularly when attacked by fighters of the day. They simply held the chute in their arms and threw it away from their body to get it to open. This method would not work for a pilot. Chutes were bulky and in the way while flying, and they would snag on a spinning, burning airplane. As refinements were made, it was discovered that silk was lightweight and strong and could be packed tightly into a backpack. The only thing that needed to be overcome next was the belief that one could not survive a period of free fall, no matter how short the time period.

Silk had its problems as the material of choice in a parachute. A one-time use was usually not a problem. On the other hand, using it several times meant folding the silk in the same place each time. Weaknesses developed on those creases and the material would tear along the folds. The problem became more serious as the hostility of the environment intensified.

Planes were flying higher and faster and in that context, chute failure was becoming a problem. We needed a different, stronger lightweight material. Thanks to a very emotionally troubled chemist at DuPont that new fabric was being developed.

Wallace Carothers was an American chemist, inventor and the leader of organic

chemistry at DuPont, credited with the invention of [nylon](#). While a group leader at the DuPont laboratory, near Wilmington, Delaware, where most [polymer](#) research was done, Carothers, in addition to first developing nylon, also helped lay the groundwork for [neoprene](#).



Wallace H. Carothers

On February 28, 1935, Carothers team produced a half-ounce of polymer from [hexamethylenediamine](#) and [adipic acid](#), creating polyamide 6-6, the substance that would come to be known as Nylon. It was difficult to work with because of its high melting point, but this polyamide was the one chosen to be developed commercially.

In 1939, DuPont started marketing this inexpensive fabric, making silky looking stockings available to women everywhere.

It is believed that 4 million pairs of stockings were sold in just one day in the U.S. alone!

Two years later, when the U.S. entered WWII, DuPont convinced the military that nylon was a stronger, lighter and more easily packed material for parachutes.

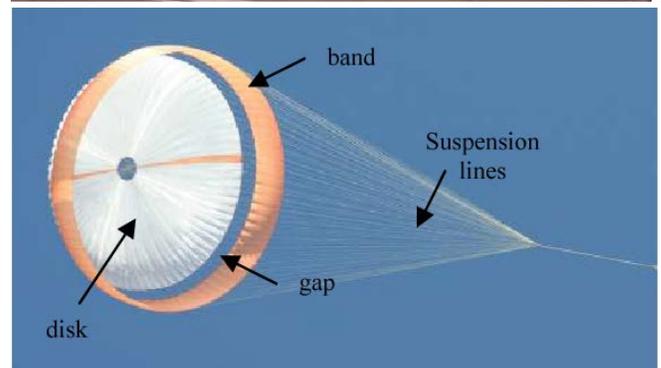
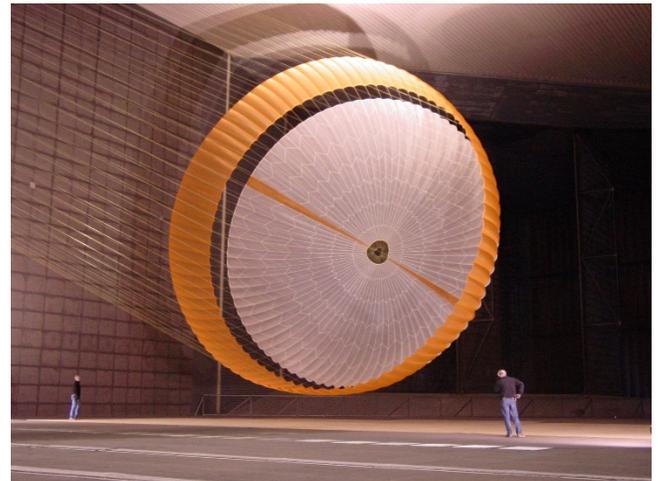
Women were asked to put their new found love for nylon on hold during the war. There was even a program to collect women's stockings for the war effort.



A collection barrel for nylons at a local Civil Defense office.

As time went on and planes flew faster and higher, the environment grew more dangerous and hostile. The need for new designs and new fabrics became apparent.

The most recent developments in parachutes are no longer calling these devices parachutes. In engineer speak, they are "Supersonic retro-pulsion decelerators."



As we look ahead to a manned Mars landing in our lifetime, we must have the ability to slow our astronauts from more than 25,000 mph to a soft landing in an atmosphere of unknown hostility with only the tools we have brought with us...but that's only the beginning of the adventure.

The International Latex Corporation is better known for its brand name: Playtex But NASA wasn't dropping names just to recruit astronauts!

How Playtex Helped Win the Space Race

BY JAKE ROSSEN

To the uneducated observer, “Big Moe” and “Sweet Sue” looked like horizontal monoliths on the floor of the production plant of the International Latex Corporation (ILC) in Dover, Delaware.

The giant sewing machines were the only two that were big enough (after the additions of an elongated arm and a new sewing bed) to accommodate the bulk of a nearly-completed A7L, the company’s answer to NASA’s demand for a spacesuit that could withstand the punishing conditions of lunar exploration.

The “A” was for Apollo, NASA’s blanket name for the moon missions; the “7” signified the generation of suit; the “L” was for ILC and latex, some of the most crucial material in the 21 layers being stitched and glued together around the clock.

Using modified versions of the same Singer sewing machines used for girdles, bras, and diaper covers, ILC—better known by their overarching consumer brand label, Playtex—was, after a successful bid on the job, charged to protect astronauts from the jagged rocks, lack of oxygen, searing heat and freezing cold on the moon’s surface. The women assembling the suits had been pulled from undergarment assembly lines, sometimes working in excess of 80 hours a week to make sure the suits were ready on time. A few of the

seamstresses would post a picture of the astronaut whose outfit they were tailoring near their stations. It was a reminder that the work they were doing was a different kind of support system than they were used to providing. One errant stitch could mean thousands of dollars in wasted expenses. It could also mean someone’s life.

That fear was more present in some space explorers than others. One seamstress kept a note that an astronaut had sent to the factory. “I would hate,” it read, “to have a tear in my pants while on the moon.”



Of all the military-industrial businesses to try and seduce NASA into being awarded a contract, Playtex was by far the least likely contender.

Formed in 1932 by A.N. Spanel, the garment manufacturer had found its niche in rubber and latex-sourced underwear, particularly the form-fitting girdles that had slowly overtaken corsets in the first part of the 20th century.

Although most of their business stemmed from intimate apparel,

Playtex maintained a small but busy Industrial Products Division that had secured contracts with the Air Force in the 1950s for pressure helmets. They had also come close to winning a bid for high-altitude flight suits with mobile joints, as well as a contract for NASA's Mercury and Gemini programs.

When NASA began soliciting bids for their spacesuit development in 1961 following President John F. Kennedy's public declaration of a moon visit, Playtex threw their name into the hat.

At a time when the space agency was preoccupied with hard-shelled suits for lunar exploration, Playtex's premise of a "convolute," or bellow-shaped joint, was intriguing. The flexion of the elbows, knees, wrists, ankles, and shoulders allowed a suit to maintain air pressure (3.75 pounds of oxygen per square inch) while keeping the wearer mobile enough to bend over, pick up objects, and climb ladders.

NASA was impressed, but Playtex's lack of experience with industrial outfitting was worrisome. Instead, they signed with longtime military supplier Hamilton-Standard in 1962 for the suit's hardware—like the backpack life support system that offered recirculated oxygen—and directed them to subcontract with Playtex for issues relating to fabrics.



The marriage was awkward from the start. Hamilton-Standard had a regimented approach to design that more closely resembled a blueprint for a machine; Playtex, in contrast, saw the spacesuit as an extension of the human inside of it. Hamilton wanted a second, back-up pressurized bladder installed in case the first one suffered from failure. It was a practical idea, but it also severely hindered movement: In a January 1964 test in simulated lunar gravity, the wearer, lying on his back, couldn't get up.

Around the same time, Playtex took note of how a front-closing suit's zipper could become too strained when the astronaut moved forward. When it asked Hamilton-Standard to fund exploration of a rear-entry suit, the company declined.

The two accomplished relatively little between 1962 and 1965. One of the most important features, a protective outer layer that could resist micrometeoroid showers, was developed by NASA internally; Hamilton-Standard pioneered a cooling

tube system to regulate body temperature. (The moon could see days as hot as 300 degrees Fahrenheit and nights as cool as -271.) Hamilton-Standard also busied itself with a self-labeled “tiger” suit that they felt addressed Playtex’s shortcomings, a side project that further fractured their working relationship.

In February 1965, Hamilton-Standard made an appeal to NASA: Playtex, they argued, was a consumer brand that couldn’t work within the confines of the complex engineering the suits required. One of the project leaders, George Durney, was a former sewing machine salesman, not a scientist. They didn’t have thousands of sheets of paper documenting every inch of work performed. Bureaucracy wasn’t their strong suit.

NASA agreed. That same month, Hamilton-Standard terminated Playtex. They no longer had a lane in the space race.



Hamilton-Standard wasn’t faring much better on their own, though. Their suits, ineffectual and stiff, prompted NASA to hit a reset button and cancel their contract as well. In spring 1965, NASA announced that they’d be holding a second round of bids for the Apollo missions. Both Hamilton-Standard and David Clark, another industrial contractor, were invited to submit samples. Playtex was not.

Len Shepard, who had been with Playtex’s industrial arm since it first began working with NASA, made a last-minute plea to the space agency: Playtex would pay its own expenses if they were allowed to be a dark horse third entrant. NASA agreed, providing the company could deliver a suit in six weeks.

To meet the July 1965 deadline, Playtex had only a skeleton crew of 12 designers and engineers free to work on the project. They worked around the clock, perfecting the bellows to allow for joint movement and incorporating NASA’s thermal cooling and protective outer shell. Some offices that held fabrics or design templates were locked up at night; supervisors picked the locks to get in.

When NASA greeted two of the three bidders in Houston—Playtex wound up being two weeks late—they had devised a series of 22 tests to see how each suit responded to the simulated

demands of lunar exploration. David Clark's suit had a pressurization malfunction: the helmet blew clean off during a simulated engine cover maneuver. Hamilton-Standard, committed to the bulk, was embarrassed to see that, after a simulated walk on the moon, the suit became too wide to fit inside a capsule. Their astronaut would have been stranded in space.

Playtex won the suit stand-off with ease, passing 12 of the 22 tests. NASA declared there wasn't a second-place finisher. This time, it would be Hamilton-Standard playing a supporting role, supplying their backpacks for Playtex to incorporate.

Work began in both Dover and at a new facility in Frederica, Delaware on the flight suits, which combined Playtex's focus on flexibility with the specifications for safety provided by NASA. More seamstresses were added to the growing department, adapting their ability to a different atmosphere entirely.



The suits had to be perfect every time out, despite some workers having

to stitch “blind” owing to the multiple layers. The women were dissuaded from using pins—it could puncture the latex bladder—but those that insisted were given color-coded tips so managers could track them. After a rogue pin was discovered in a suit, they were regularly X-rayed to make sure it didn't happen again. And if the seamstress brought in her own pins, the guilty party had it poked into her rear end by a disgruntled supervisor.

Double-shift workweeks were common. One seamstress, Eleanor Foraker, had two nervous breakdowns. While the suits were tested and re-tested, a missed detail or malfunction would cause death in less than 30 seconds. The gloves needed to be nimble enough to pick up a dime while sturdy enough to maintain pressure. A woven steel fabric was used for gauntlets to secure them to the suits.

Although Playtex had an agreement for the Apollo mission suits locked in place, they decided to secure a future opportunity: a suit that could be used for extended lunar exploration. In 1968, they filmed tests with their A7LB prototype, an air-filled suit that kept its wearer nimble enough to play football in an open field. NASA bought that one, too.

But the design of the suits had a goalpost that kept moving. After Apollo

1 caught fire on a launch pad in January 1967, killing Gus Grissom, Roger Chaffee and Ed White, Playtex went in search of a fire-retardant material that could help resist flames long enough for the wearer to make a clean break from a blaze. They found a woven fiberglass material coated with Teflon, resistant to 1200 degrees Fahrenheit.

Although Playtex began shipping the A7L suits in 1966, their real test didn't come until July 1969. That was when the company—along with 528 million television viewers—would see how they stood up to man's first moonwalk.



Smithsonian

Durney, Sheperd, and a Playtex industrial team that had grown into the hundreds watched nervously as Neil Armstrong sunk his boot into the surface of the moon on July 20, 1969.

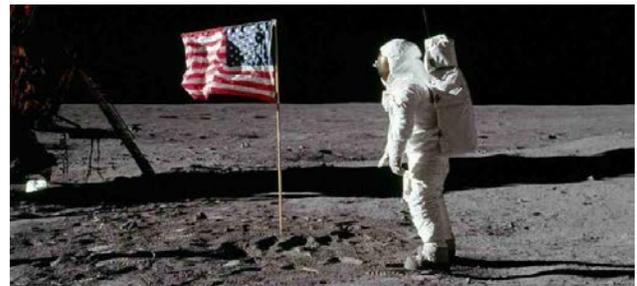
They had planned for every possible contingency—Armstrong stepping on a sharp rock, or sinking into the loose ground. One micrometeoroid shower or accident could mean death. When Armstrong appeared to stumble, they gasped.

But he didn't fall. Armstrong and Buzz Aldrin spent two and a half hours on the moon collecting samples, returning to dock with astronaut Michael Collins on the command module *Columbia*. The suits painstakingly crafted on standard Singer sewing machines had stood up to the rigors of space travel.

"It was rough, reliable, and almost cuddly," Armstrong later said of the suit.

Playtex would go on to split into separate entities, one for consumer manufacturing and one for industrial goods, ILC Dover, where they have continued making shuttle suits over the next five decades up to the present day.

After use, all of the suits were immediately shuttled to the Smithsonian's storage facility in Suitland, Maryland. In the case of the earliest lunar couture, they still have a Playtex seamstress's final touch: their name written inside of the suit.



Follow the link below to see a video about NASA's development of the Spacesuit:

<https://www.nasa.gov/feature/nasa-spacesuit-development>

Newsletter Feedback

It's always nice to know that the newsletters are being read and we sometimes receive a particularly touching comment about articles we have published. Many people either commented or wrote to us about the piece on Tuskegee Airman Humphrey Patton and we now share the comments of LIEFC member Randy Davis:

"Your newsletters are always wonderful, but this one truly stands out. Flying Tiger history is so important in the annals of American aviation--and now to see the piece from Ronald Reagan that you included. In addition to my brothers, I am going to share your newsletter with various members of our Phoenix air team here; as I know that they would like to see it.

I also want for my colleagues here to more fully understand that Long Island truly was a cradle of American aviation, and how important the work of the Long Island Early Fliers is to support recognition of this fact. From Lindbergh to Grumman Iron Works to Republic Aircraft and beyond, Long Island is where American aviation was at, for decades.

You also included a magnificent tribute to Tuskegee Airman Humphrey Patton. I now realize why my father, after we had moved my parents to Cartersville, was so anxious to have this gentleman show up here a few years ago at a special event at our Bartow County Historical Society, which event was showcasing another Tuskegee Airman (then deceased) who had grown up here in Cartersville. Indeed, I

now attach a photo showing my parents with Humphrey Patton during that event here in town. I now more fully understand why my Dad thought it so important to bring this particular gentleman (who was then also living in Georgia, with his daughter, about 75 miles away) to this event.

Thank you again for getting so many LIEF and Quiet Birdmen members to Coram for the memorial event in April. You folks are the best."



Humphrey Patton is flanked by Lester and Jean Davis at a ceremony to honor Tuskegee Airmen in Cartersville Georgia

LIEFC appreciates the significance of the entire Davis family and Coram Airpark to Long Island's aviation heritage and thank Randy Davis for his kind words of support.

L.I.E.F.C. News:

We are looking forward a great bus trip to Battleship Cove and Old Rhinebeck Aerodrome on Friday, September 28th and Saturday, September 29th. At the present time we have 28 signed up for the trip.



For any ladies who were concerned about being the only wife or significant other on the trip, you can put that fear to rest. At the present time there are 8 ladies who are signed up for this adventure! So if you are thinking of joining your husband but didn't think you would fit it, come on and enjoy the fun!

We also have two rooms left for any late comers. If you are on the fence, jump off and join us for a great time!



The trip will depart Bayport Aerodrome at approximately 5:45 a.m. on Friday. After a short stop at Christopher Morley Park in Nassau County, we will be heading for Fall River to start our tour.

Battleship Cove has places to eat on the pier and features not only a battleship, but a submarine, a Destroyer and a PT boat museum. There are also displays of Naval uniforms and artifacts. One can easily



spend a full day and then some at Battleship Cove. At the end of the day, it's a short bus ride to the Inn where we are staying, so there will be plenty of time to eat, drink and relax that evening.



The next day, Saturday, we will head to Old Rhinebeck to tour the museum they have set up, as well as seeing their famous Airshow, at 2:00 p.m. After the show, we will head home on Saturday evening.



Please use the sign-up page at the end of this newsletter if you wish to join us. The cutoff date is September 5th, so don't put it off any longer!

We are all wishing Pat Gallagher a speedy recovery and restoration of his normal vision after he experienced an episode while at the hangar. Pat has a blockage of one of his carotid arteries that is causing the problem. He appears to be doing well, outwardly and we all pray for a strong recovery for Pat.

In an attempt to create more room in the hangar, we have decided to sell one of our gas powered golf carts and a small utility trailer. There are also a few other items (old hand tools, etc.) so if you have time, stop by and take a look one Wednesday morning.

No L.I.E.F.C meeting in September!

Instead, we will be participating in the B.A.S. Community Appreciation picnic. Please plan to join us Sunday, September 10th for the festivities!

Welcome New Members:

Chuck & Jane Haddad

Time to smile.....

I wonder how the International Latex Corporation came up with the brand name "Playtex?"

I think my neighbor is stalking me as she's been Googling my name on her computer. I saw it through my telescope last night.



I find it ironic that the colors red, white, and blue stand for freedom until they are flashing behind you.



Did you know that dolphins are so smart that within a few weeks of captivity, they can train people to stand on the very edge of the pool and throw fish to them?

My boss said "Dress for the job you want, not the job you have."
Now I'm sitting in a disciplinary meeting dressed as Batman.

VIA FUNNYSTATUS.COM

The pharmacist asked me my birth date again today. I'm pretty sure she's going to get me something.

Never ask a woman who is eating ice cream straight from the carton how she's doing

LOL307946 COM-USERS-27806007

The location of your mailbox shows you how far away from your house you can be in a robe before you start looking like a mental patient.

When I was a kid, my parents would always say, "Excuse my French" just after a swear word... I'll never forget my first day at school when my teacher asked if any of us knew any French

Just read that 4,153,237 people got married last year, not to cause any trouble, but shouldn't that be an even number?



**Join us for a two day trip to
Battleship Cove & Old Rhinebeck**

Friday, September 28 – Saturday September 29th

Price includes the following:

- 1). Round trip tour bus**
- 2). Admission to Battleship Cove,
Fall River, Massachusetts**
- 3). Overnight stay at Riverview Inn**
- 4). Saturday admission to Old Rhinebeck Aerodrome**

Pick up is at:

- 1). Bayport Aerodrome – departure time TBD (about 5:45 a.m.)**
- 2). Christopher Morley Park (Nassau County) about 7:00 a.m.**

We will be traveling on a tour bus that has a restroom facility.

Cost:

\$335.00 per person / \$570.00 per couple

Checks should be made payable to:

Long Island Early Fliers Club, Inc.

P.O. Box 43

Holbrook, NY 11741

Please call Fred at 631-523-5407 with your questions

Names: _____

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Phone: _____

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Long Island Early Fliers Club, Inc. is a non-profit organization founded in 1956 and Chartered by the New York State Education Department. We are dedicated to aviation education and preserving Long Island's aviation heritage. Volunteers who want to help educate and preserve our history are always welcome. Annual Membership in our organization is \$35.00 for individuals; \$50.00 for families.

Donations of aviation memorabilia, aircraft and aircraft parts, aviation clothing, display quality models and items of historic significance are always welcome and greatly appreciated. Cash donations, as well as artifact donations are tax deductible. You may visit our facility at Bayport Aerodrome, Vitamin Drive, Bayport New York most Wednesdays between the hours of 9:00 a.m. and 1:00 p.m. Appointments are necessary as airports are secure locations and can also be arranged at other times for your convenience. Contact us at: L.I.E.F.C., P.O. Box 43, Holbrook, NY, 11741 or call (631)-523-5407 (Fred Coste) or fax: 631-588-2147

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