Space Shuttle Wings in the Garage

By Bill Messer

Editor's note: Gustave Arthur Miller, known by all friends as Artie, moved to Pine Knoll Shores in the mid '80s after retiring from Grumman Aerospace Corporation. Artie was the founder of the Grumman retirees club in Pine Knoll Shores, as a number of other Grumman retirees moved here. He and wife Fran were active members of St. Egbert Catholic Church in Morehead City, where Artie served as president of the men's club and made weekly visits to fellow church members at the hospital who were sick or disabled. He and Fran were active members of what was then Bogue Banks Country Club, and ran the covered dish monthly program at the club for several years until they were replaced by Joan and Wade Lamson later on. Artie was president of the men's 9-hole golf league at the club as well. After helping to build the court, Artie organized and ran the town's Bocce club at Brock Basin, and presided over the games as well as the pot luck lunches players enjoyed after the games. He was a Pine Knoll Association volunteer, serving as captain for 10 years to help maintain Ocean Park, while also sharing flag-raising and leaf-blowing duties. Most people recognize Artie, an avid bike rider, as the "old guy" who zipped around town on his bike visiting friends and sharing his smile with everyone. He practiced Tai Chi for 50 years, which no doubt kept him in shape to reach 96 years of age on December 10. He and Fran had three children and many grandchildren and great grandchildren. Artie lost his beloved Fran in 2016 after 73 years of marriage. Everyone agrees that although he hailed from New York, he epitomized a true southern gentleman—gentle, caring, friendly, eager to help others and a real Pine Knoll Shores asset. Writer Bill Messer had the chance to sit down with Artie recently and shares here some details of his amazing career.

Art Miller was born during the dawn of aviation, lived near Roosevelt Field in New York, and went to work for Grumman Aircraft Engineering Corporation in 1941, building the TBF Torpedo Bomber (the same type of plane that former President George H. W. Bush flew in WWII) and would later assemble wing components for the space shuttle.

I had met Art Miller a few times before, and had intended to do a longer interview for a story later. Later came quickly when I learned he was ill with not much time left. "I'll be gone by Christmas," he told me. Some days are better than others, and I was fortunate to find him up and alert, delighted to share some time with someone who was interested in what he had done with his life's work.

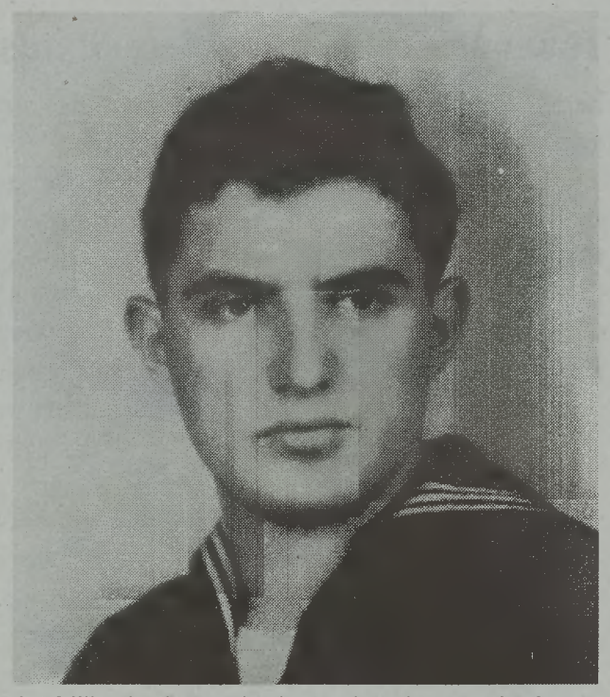
He began at the beginning. "I was born in 1921. I've been up to Kitty Hawk a couple of times. I kind of knew about Wiley Post and the rest of those guys because I lived not too far from Roosevelt Field. They [pioneers of aviation] seemed to assemble at Roosevelt Field, but when I went to Ohio one time, I found out all the rest of 'em were in Dayton."

The Wright Brothers were Dayton boys. Art agreed that their visionary success was built on a solid foundation of engineering and extensive wind tunnel tests of wing airfoils. He reached over and uncovered a box to show me what was inside, a gift he had recently received. I recognized it immediately, and you would, too, if you followed the "Peanuts" episodes. "That's a Sopwith Camel," I said, Snoopy's favorite airplane.

"That's right. Look inside there at the detail; you can see the flight instruments and the control stick," he said, and I was impressed at the incredibly fine details of this presentation model. "It's got twin .30 caliber machine guns, firing through the propeller. That's something that always puzzled me, how they do that without shooting the propeller off," he added.

I happened to know how, and chimed in, "There's an interrupter gear timed to the engine crankshaft that interrupts the firing mechanism, and it's timed to the rotational position of the propeller," I said, "but I can't remember who designed it." Irene, Art's daughter, was on it, pulling out her Android tablet and looking up my suggestion of Google search terms, "propeller, interrupter gear" and soon enough pulled up the answer: Anthony Fokker.

Satisfied and moving along, I got to the reason I was there. "Art, can you tell me about your work on the space shuttle? How did you get started at Grumman?" There's an unavoidable consequence of two or more aviation enthusiasts talking about "the old days" as any hope of continuity goes out the window. This was the case here, and my best efforts at following a logical timeline went up in the sky, so what follows is pretty much how the conversation went.



Art Miller in the early days when he was in the Navy.—*Photo Courtesy of the Miller family*

"What I did, the most important, well, maybe not, but the most interesting things, what I enjoyed the most, was the landing on the moon. I was a mechanic; I did what the engineers had tried, all the tests. When we first started working on the landing gear for the moon, we tried all kinds of things, oleos [oil-filled shock absorbers, like on a car]. The most important thing for landing on the moon was to get it on the ground in a level form so we could use that as a take-off platform. Now, all the struts, oleo and that kind of stuff, what happened when they made the test drops, it was like a pogo stick, bouncing. You couldn't do anything with it. I knew this guy, . . . an engineer in the shop above mine, and one day they all went to lunch, these engineers, eight or nine of 'em who were working on the landing gear, and this one fella after lunch said, 'I don't understand why us bunch of guys can't think of some way to do this. I am disgusted with this place,' and he put his empty soda can on the floor and crushed it with his foot. The head engineer said, 'That's it!' "

Art continued: "The solution was as simple as filling the gear strut with aluminum honeycomb that would crush on touchdown impact, absorbing the energy that would have 'rebound' energy released for a bounce. We made thousands of tests, and that was it."

Hoping to get back on a timeline, I asked, "When did you start with Grumman?"

"I started in '41, before the war. I was a mechanic, working for the guy who was the future manager and president of Grumman. We were working on the TBF [Avenger torpedo dive bomber] center section, the prototype. He taught me a lot; his name was Danny Culligan. I had come to Grumman when they offered to teach us all we needed to know for the job, in 1940, in six months, going at night. My father had just had a stroke and we needed the money."

"How old were you then?" I asked.

"I was 19. We were working on the center section [of the prototype] with the wings. It had a folding wing; we put two hinges here [indicating the root of the wing] and two hinges on the center section, on both sides. We took the left hand wing out of its [assembly] fixture and put that wing down and those hinges matched perfectly, went right in. We took the right hand wing out of its fixture and put it down, and the hinge hit the edge. 'Oh my God, it's a disaster,' we thought, and got all the engineers down there. Finally, we just took some 400 grit sandpaper and polished off about a thousandth of an inch and it slid right in.

"The [wing building] jig was off about a thousandth, so we corrected that. So the war came along in late '41 and I wanted to go in the Navy right away, but my father said to wait a little while and let the first rush get sorted out. He said, 'I go into New York every day and the line to get in circles around the building at least three times.'

"It was late spring or early summer and I went on down, and the Navy said they didn't want me because my teeth didn't match. They took my friend, but not me. About 10 days later I got a call and went down there, 90 Church Street. The Navy

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