

THREE GENERATIONS OF PICCARDS -- THREE WORLD RECORDS

Professor Auguste Piccard, a Swiss Scientist and Physicist with a specialty in high precision measurement instruments, conceived the idea of ascending into the Stratosphere up in a band of 9-31 miles.

Professor Piccard designed, engineered, and built a stratospheric balloon with a hermetically sealed aluminum cabin, air tight inside, and almost normal atmosphere inside for the trip.

The balloon was inflated with 100,000 cubic feet of hydrogen gas, and on May 27, 1931, Professor Piccard and Paul Kipfer started their ascent from Augsburg, Germany. In one-half hour they were up over 9 miles as the hydrogen expanded increasing their lifting power.

Once in the Stratosphere, they set a world record altitude of 53,400 feet, slightly above 10 miles, which was confirmed by the International Federation for Verification of World Records. This record was held for about one year.

At the record altitude, they could see the earth over a radius of 280 miles, about the size of France.

They started their descent by opening the valve to the balloon, letting out some gas, and as the gas contracted, ballast was let go to ease the rate of descent. They had drifted, and landed at 8,500 feet on the ice in the Austrian Tyrol Alps.

The experience with the balloon aerostat brought Professor Piccard to the idea of the hydrostat, and to inner space with the bathyscaphe Trieste. This is where the gas in the balloon changes to aviation gasoline in the Trieste float for lift.

Professor Piccard, a man of both worlds, outer space of eternal brightness, and inner space of eternal darkness: He designed and engineered the bathyscaphe Trieste and had his son, Jacques Piccard participate as co-developer in building the Trieste.

The Trieste had a submarine-shaped compartmented float, 59 and 1/2 feet long and 11 and 1/2 feet wide, with conning tower in the center and an 18-foot ladder leading down through the float to the seven-foot diameter forged steel, 14-ton sphere with 4 and 1/2 inch walls and portholes. The sphere compartment was built to withstand depth pressures of more than 8 tons per square inch over its entire surface.

The Float is filled with 33,550 gallons of aviation fuel 3/10ths lighter than sea water that provides the lift and does not mix with the sea water. The aviation fuel acts in the same manner as the hydrogen gas does in the free balloon. The float is fitted with a special valve that allows for equalizing the pressure inside and outside the float as it descends or rises. The gasoline is compressed and as it cools, lets in more sea water with the gasoline rising to the top of the float. As the Trieste rises, the gasoline expands, and pushes out the salt water.

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The Trieste is equipped with two eight-ton small steel pellet ballast hoppers, one fore and the other aft of the sphere, and magnetically controlled from inside the sphere. Equipped with two electric motor propellers, the craft can be turned in any direction, and be slowly propelled across the ocean floor. At sea, can be towed at 5 miles per hour. It can be lifted by a heavy crane, and flown to any port of call.

The Bathyscaph was fitted with a mechanical arm which can be operated by remote control within the sphere for picking up deep sea objects. The sphere contains batteries, electrical controls, depth gauges, passive sonar, tape recorders, motion picture, still camera, telephone, oceanographic instruments, and air purification system and two search lights for scanning the ocean floor -- a true inner space ship.

The writer had a two-year tour in 1957-1958 in Naples, Italy as Plans Officer for the U. S. Navy command COMFAIRELM. One of my responsibilities was tracking Soviet submarines in the Mediterranean.

Dr. Andreas Rechnitzer, an Oceanographer from the U. S. Navy Electronic Laboratory and Scientist-in-Charge of the Bathyscaph program met with the writer, and I became interested in the sonar capabilities of the Trieste. I felt we could go down below the negative sound velocity layer and track submarines and ships.

Dr. Rechnitzer asked if I would like to take a dive? Absolutely yes was the answer! He then introduced me to the co-inventor, Jacques Piccard. On 15 October 1957, I made Dive 46 near the Island of Capri with the exceptional Jacques. It was exciting and very educational.

We boarded the Trieste from a small craft. Captain Jacques Piccard led the way down the 18-foot ladder to the sphere hatch, a finely-machined frustum of a cone weighing 400 pounds. I was assured that as the hatch was well balanced and easily closed, there was no latch needed as the pressure increased, the tighter the cone hatch would seat.

The sphere was loaded with instruments and easily seats two persons. Captain Jacques flooded the fore and aft compartments, and the Trieste started its descent, and passing the 600 foot level light outside which began to fade, and at the 2,000 level, it was pitch black.

I noticed that Captain Jacques was silent and relaxed. I did not want to have the 48-ton Trieste stuck in the primordial ooze. I mentioned that we Navy pilots always tried to just grease on those landings. About five minutes passed and I did not feel that there was any landing motion. Jacques laughed, turned on the flood lights and I looked out my porthold and there we were on the bottom of the ocean safe and sound. Jacques had stopped the Trieste's descent

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about 5 feet above the bottom as the gasoline cooled, we made the softest landing I had ever witnessed. Jacques was given an A+ for the touch down.

We spotted two small fish which we photographed along with some cephalopod holes in the ocean floor at 885 feet in the Tyrrhenian Sea. Captain Jacques turned on the passive sonar and, in searching, made contact with a very distinct clomp, clomp of a propeller. After tracking a bit, Jacques said it sounded like a slow freighter. On time to ascend, Jacques timed a few seconds of magnetic release of steel pellets from the two ballast hoppers and we ascended to the surface.

In 1958, the U. S. Navy purchased the Trieste from Professor Piccard with the intention of exploring the vast oceans. The Professor's World Record and his genius genes had been passed on to the second generation, Captain Jacques Piccard.

Dr. Rechnitzer and Jacques decided that a deep Dive should be made in the Trieste. On 23 January 1960, the Trieste, with Captain Jacques and a U. S. Navy Lieutenant Don Walsh, a submarine officer as observer, went on an heroic dive into the Challenger Abyss of the Marianas Trench in the Pacific Ocean to 35,800 feet -- about 7 miles, with a water pressure of 8 tons per square inch. It took 8 hours for the whole trip, and 20 minutes were spent at the Trench bottom position recording data. This world's record will last forever. If there is another attempt, someone will have to dig a deeper hole, as the Challenger Abyss is the deepest spot in the world's oceans.

Yes, the World's Record and Genius Genes were passed on to the third Swiss generation, Dr. Bertrand Piccard. Dr. Piccard, the Captain of the 180 foot Breitling Orbiter, along with a British balloon instructor, Brian Jones, completed the world trip in almost 20 days. The high tech Breitling was a combination hydrogen gas, and hot air from propane burners balloon.

The pressurized 16 and 1/2 by 10 foot cabin is fitted with a kitchen, bunk (used one on watch, one slept), toilet, control panel, excellent communications equipment, solar panels, and fuel tanks.

They lifted off from the Swiss Alps on the first of March 1999 and in 19 days, 21 hours and 55 minutes aloft, covering 29,056 miles, landed in Mut, Egypt, about 300 miles West of Cairo.

They passed their start line of 9.27 degrees West Longitude in Mauritania at 4:54 A.M. Saturday, setting a world's first orbiting record. Flying at the 35,000 to 43,000 foot levels when they caught an atmospheric jet stream, the balloon could reach 100 miles per hour.

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It was mighty cold at their flight levels, their water supplies would freeze at nights, and had to be melted the next day for use. The arduous trip tested the mettle of both pilots and they agreed that the trip was exhausting, but they summed up their courage, supported each other, and working as a team, made the non-stop record orbit of the earth.

On return to Geneva's International Airport, Dr. Piccard sought out Pierre Eckert and Luc Thullemans, the two meteorologists who had guided the balloon in and out of the jet streams with pinpoint precision. Their combined expertise allowed Piccard and Jones to complete their global circumnavigation with fuel to spare.

This is the story of three generations of Piccards and three world records.

Information was used from Earth, Sky and Sea by Professor Auguste Piccard, given to the writer by son Jacques Piccard; The Trieste -- The Story of the United States Navy's First Inner Space Ship by Dick Snyder, along with the help of Dr. Andreas Rechnitzer; and also several newspaper articles.

I plan to send a copy of this paper to:

The Guinness Book of Records
President Mark Young
6 Landmark Square
Stamford, Connecticut 06901

Written by:

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William G. Stearns II

Captain William G. Stearns, II
United States Navy, Retired
4908 Darden Avenue
Orlando, Florida 32812
USA
Tel: 407-857-1780