

DIFFERENT WEATHER AT DIFFERENT PLACES

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1936, Brazil -- Driving a new Ford in Brazil, from São Paulo to Rio Verde.

My father decided to be a medical missionary, and start a new hospital in the middle of Brazil. He spent a few years in Brazil, learning the language, and getting his Harvard medical diploma revalidated. He had spent a year in western Brazil (Burití was definitely not the right spot), explored the interior of Brazil, and then spent another year working in a hospital in the center of Brazil. The family had returned to the United States for a year's furlough. Now he was ready to start a hospital.

This was in February 1936 – the rainy season. Not only did it rain frequently, but it also was heavy rain. In the front seat of the Ford were my parents, and in back was my elderly grandfather, my 2-month old sister Alma in a hanging crib, a Brazilian girl (Doninha), and myself.

The first day the roads were passable, -- from São Paulo, a big city on the coast, to Uberlandia, a distance of 400 miles. For the remaining 350 miles, the dirt roads were worse! In the dry season they might have a few inches of dust, but in the rainy season this could be several inches of mud! The trucks made deep ruts. Our new Ford had a low clearance, so we had to avoid the ruts. A few times we got really stuck. This meant getting out a heavy jack, raising a wheel, and filling the hole with branches or logs.

If we met another vehicle, we would often stop, and exchange information about the road ahead. Sometimes they helped us, and sometimes we helped them. In one car we met was the governor of the state of Goiás. He was enthusiastic about the plan to build a hospital, and pledged his support. After two hard days of travel, we arrived in Rio Verde.

1938, Connecticut River in flood

Every spring the Connecticut river receives an extra amount of rain, and rises. Occasionally it rises quite a bit! My uncle Bert had a motor boat, and with his elder son went out to see if anyone needed help. Unfortunately, a big chunk of ice collided and upset the boat. My uncle Bert and his son were dumped into the water. They managed to get hold of a tree, and climb into the branches. But they had to wait for daylight, before they were rescued. Lincoln, my uncle's

younger son, told me he still remembers waiting with his mother before they finally got the news of their rescue. The story appeared in the Reader's Digest.

1944, Air conditioning

Our family was in Brazil, and was due for a furlough year in the United States. But World War II had not ended, and the German submarines were still sinking ships in the Atlantic Ocean. Pan American Airways had just inaugurated an airline from São Paulo to Miami, using DC-3 airplanes to Panama, and hydroplanes (that landed on water) from Panama to Miami. Some hydroplane flights were cancelled, and passengers backed up in Panama. The weather was hot, hot, HOT. We were delayed one week, and stayed in a hotel (paid for by the air line). The hotel was air conditioned -- our first experience with a modified weather. It was heavenly! We finally flew to Miami.

1944, Snow

From Miami we traveled 24 hours on a train to Washington, DC, and finally to my grandmother's home in Hazardville, Connecticut. It was winter, and snow was on the ground. I still remember my younger sister's comment on the snow. "Looking out the window it's so pretty -- but out in the snow is so co-o-old!"

1956, More muddy roads

When I finished my two years in the army, I was married to Doris, and I was getting back to civilian life. I thought Doris should visit Rio Verde, where my father had started his hospital. Once we were there, my mother saw all the musical talent available, and sent six of us off to provide some Christmas music to a small church, 20 miles from Rio Verde, in Santa Helena.

It was again the rainy season, and the roads were muddy. But this time we had a jeep -- with four-wheel drive. The road was slightly higher than the terrain, with a ditch on each side. I managed to keep the jeep on the mound in the middle of the road. After travelling some distance, my older sister Hope asked: "Gary, may I drive?" I said "sure". We stopped and changed places. Hope started and did OK for a while. She stayed on the center for a while, but then she strayed to one side. The car started to slip sideways and ended up in the ditch. My sister's only comment was: "OK Gary, you can take over now." Thanks to our four-wheel drive, I had no trouble getting out of the ditch, and back to the middle of the road.

1956, Brazil was hot

In the rainy season, it could be hot when the sun shone. Doris and I were at a small railroad station (Jandira), waiting for the train, with no place to sit down. She felt woozy, and then fainted. The station master invited her into the station office, out of the sunlight, where she could sit down. She recovered quickly.

1960, The first weather satellite

By 1960 I had my PhD in Physics from Harvard, and experience with: piezoelectric crystals (sonar to hunt subs), elementary particles (pi mesons), and operations research (applying mathematics to business problems). But discoveries in these fields did not affect the average person in the street. And then I saw an ad in a technical journal – RCA was looking for engineers to build the first weather satellite. I jumped at the chance, applied for a job, and moved to Hightstown, NJ, located near RCA Laboratories in Princeton. I had found my niche! For the next 23 years I worked at RCA and COMSAT, building and testing weather satellites and communications satellites.

My first task was to calculate the temperature of the first weather satellite, after it was launched. This involved calculating the radiation absorbed from the sun, from the earth, and from the moon, and how much heat would be radiated into space. When TIROS 1 was launched on April 1, 1960, the temperature measurements telemetered by the satellite agreed with my predictions. The photos taken by TIROS were the first photos of the earth taken from outer space, -- and new photos appeared on the front page of newspapers for many days.

Prediction of hurricane paths

The more warning there is of a hurricane, the better the preparation for it. The familiar spiral pattern of a hurricane, now familiar to both meteorology experts and TV viewers, makes it easier to determine the center of the hurricane. And plotting the path of the hurricane-center makes it easier to predict its future locations. The more data there is, the better the prediction.

Days ahead of time, the prediction for Hurricane Sandy was for it to parallel the Atlantic coast, and then turn and land on New Jersey. But then one meteorologist included the effect of a disturbance coming from western U.S. This showed Hurricane Sandy being held off the coast a little longer, and to land on New York city. Other meteorologists agreed. New Jersey residents could breathe a sigh of relief, and New Yorkers had a little longer to prepare for it.