

What It's Like To Be Ninety

To Jennifer, Tina, Ann, Robin, and the 60 Cardiac Rehab friends who signed my 90th birthday greetings and provided the surprise party and gift:

Thanks. I was so dumbfounded by the party when I arrived that day that I could only mumble in response to your question "What is it like to be 90?" with "Like 89, only more so". Now that I have had a chance to think about it I would like to express my thanks with a fuller response to your question. But let me change the question somewhat.

I think I can tell you more about what it is like to have lived through 90 percent of the 20th century. For our world today is very different from that into which I arrived 90 years ago, amazingly different. And most of the onrushing changes occurred before many of you were born. So you do not regard them as changes. On the other hand some of the old ways are still producing better results than the glamorous new high-tech innovations, particularly in the field of medicine. That relates to what we are doing here in Cardiac Prevention and Rehab, so I want to give credit to the old ways too.

The War. In 1905 Roosevelt was president, Theodore that is. F.D.R. did not come on until some 28 years, and another war, later. In 1905 "the War" was the Civil War, or, as we southerners called it, The War Between the States. Until I was about 15 I knew lots of Confederate veterans who loved to regale us kids with their endless yarns about it. My great uncle Sam was a big talker even though his speech was slurred by a minnie ball that went through his face at Shiloh. I had heard all his stories over and over, so one day I turned to his younger brother who never said much. "Uncle George, could I see your rifle?" "I aint got it", he said. Then after a pause to reflect he continued. "When they came and said the war was over, I was out in Georgia. And I tuk my rifle down off my shoulder, and I told him: 'Old rifle, I been toting you all over Mississippi and Alabama and Georgia. And you was heavy!' So I threwed him behind a log and walked home to Mississippi." -- You have to be nearly 90 to remember those old guys.

I also remember my grandmother telling me stories that her grandmother had told her about the War of 1812. Those were "the olden times" in 1912.

Small towns. My father was a minister, and we lived in small towns. Traffic was horse or mule drawn. We did not have lawns, or sidewalks, or paved streets. When those things were

introduced it made a big difference, not necessarily for the better. Instead of lawns such as we have today, we had a "front yard" and a "back yard", both of which had a lot of plain dirt. Certainly that curse, the power lawn mower, did not exist. Our games, marbles, spinning tops, mumble peg, jacks (for the girls), were played on, and depended on, that smooth packed dirt. Those games disappeared when lawns, sidewalks, and soil replaced good, useful, old dirt.

Older boys organized neighborhood teams for baseball, football, and track, played on vacant lots. We didn't need adults to organize Little Leagues for us. Our team's pitcher could throw a real curve ball. He later pitched for the Chicago White Sox.

There being no radio, television, or air conditioning, the old folks sat on the front porch and talked, or visited back and forth with neighbors. Their watchful surveillance kept the neighborhood safe. Was it progress when the front porch became obsolete? And automobiles made the streets unsafe for games?

Our back yard was divided into the usual three parts: the house yard where my mother kept chickens, the barn yard, and the garden. My chores from age 8 to around 14 included getting in coal and making fires in each fireplace since there was no central heating. I also fed two cows and some pigs, milked the cows, and threw the manure over the fence into the "liberty garden" where we raised our our vegetables in spring and summer. It did not occur to me that these chores were a hardship. It was a long time ago.

On Grandmother's farm. In the town we had electricity and running cold water, then the marvels of modern science, but no gas heat. Water for baths had to be heated on the wood stove and poured into the tub. That tended to limit bathing as a luxury. On my grandmother's farm, where my mother took us to spend summers, things were even more primitive: oil lamps instead of electric lights, and water for the house and live stock had to be cranked up from the well in a well bucket. That was my job; and you have no idea how much water cows drink on a hot day.

I loved to help my uncle Jack, who ran the farm. When he was cultivating the sweet potatoes I would walk ahead of the plow and turn the vines aside with a stick so the plow would not cut them. Then on the next row I would turn them back. Uncle Jack did his own blacksmithing too. My part in that was to pump the bellows of the furnace to heat the work while he pounded it. And I was allowed to earn money picking cotton at 50 cents per hundred pounds. I doubt that I ever earned 50 cents that way.

Another job, which was done for the women in the kitchen, was to go to the barn, shell some corn into two bags, saddle the horse, and take those bags to the mill. The miller, who

was some kind of cousin, ground the corn into cornmeal and took some out as his pay. Then I slung the rest in those bags over the horse's back and rode home. That was fun. Unless you are 90 you probably don't remember farms like that.

The doctor. When somebody was sick the doctor would come by horse and buggy with his little black bag. There really was no therapeutic medicine then, that is, medicine that could actually cure your illness. He took your temperature and looked at your tongue. Then he prescribed bed rest, chicken soup, and medicine to ward off "autointoxication" -- constipation to you. That had to be avoided at all costs! For little kids the medicine for that was Fletcher's Castoria, for big kids castor oil, and for adults Epsom salts or calomel. That last was poisonous mercurous chloride. It undoubtedly did far more harm than good. If the illness was one of the contagious childhood diseases, the doctor would require quarantine from the other children. For it was known that these were caused by "germs". But neither immunizing vaccines nor antibiotics were available or known, except vaccination for smallpox. A lot of kids died from diphtheria, whooping cough, typhoid fever, scarlet fever, and sometimes from measles. These diseases were mild with me. That is one reason I am here for my 90th birthday.

Grown men would sometimes die suddenly from "acute indigestion". The treatment for that was a mustard plaster applied over the abdomen, usually not in time. In any case the treatment did not work. I was grown before I found out that "acute indigestion" was really a heart attack. Even after they learned what a heart attack really was the new treatment -- oxygen and bed rest -- was wrong except for the earliest stages. The idea of using controlled exercise, such as we have in Cardiac Rehab, is really of quite recent origin, but it is oldfashioned in concept. Back there it was known that angina was a heart condition, and that digitalis helped to relieve the pain, though it was not a cure. This was one of the old herbal folk remedies that turned out to be valid scientifically.

We kids had a lot of skin infections that turned into boils, particularly in the summer. The treatment for a boil was "antiphlogistine salve" to draw the pus and prepare for the doctor to lance it and let the pus out. The real way to control this ailment was with soap and water. When hot running water made bathing easier the boils problem disappeared. Similarly, both kids and adults then had a lot of intestinal upsets, the cause of which was contaminated food. Medicine was relatively ineffective in managing these illnesses. But looking back from the perspective of age 90, one realizes that the reasons these things are much less troublesome today include the electric refrigerator and dishwasher, which reduce food contamination. That is prevention, not cure.

Today we take pride in the wonders of modern medicine, in its glamorous new scientific achievements; and are aghast at their high cost. But a 90-year viewpoint throws a different light on that too. Let's divide medical science into preventive medicine, supportive medicine, and therapeutic medicine. Therapeutic medicine is the kind that, after you get sick, diagnoses your ailment and cures you by medication or surgery. That is the glamorous part, and the part that most people think about when speaking of medical science. It is the part we are willing to pay for.

Old low-tech supportive medicine simply helps the body to cure itself. It includes: bed rest, chicken soup, nursing care, aspirin and stronger pain relievers, and very recently controlled exercise rather than bed rest. There is also a new high-tech form of supportive medicine. It uses new heart, lung, and kidney machines, marvelous new surgical techniques, and modern drugs to prolong life for incurable patients. It is amazing, exciting, and very expensive. But the quality of life that it prolongs is so poor that a reaction against it is gaining force. The old forms of supportive medicine get better results.

Preventive medicine includes: public health, control of epidemics, immunization by means of "shots", sanitation, clean air and water; as well as proper diet, exercise, and life habits. Those last items are included in the business of our Cardiac Rehab. I owe my 90 years in large measure to preventive medicine. For it was well developed when I arrived in this world. It continues to deliver far, far more years of satisfactory life to the individual, and to the population as a whole, than does glamorous therapeutic medicine. Yet it is the poor relation among the medical sciences. It has much less federal and state funding, and far less Medicare and Medicaid funding. And this country continues to cut back on nurses and hospital beds; and proliferates the gadgets for artificial life support with specialists to work them.

That is crazy! If this country really wanted to provide better health care for its citizens, without the burgeoning costs that threaten the system today, it would transfer many billions of dollars out of therapeutic medicine, and artificial life prolongation, for old guys like me who can't be cured or made young again. And it would put the money into more supportive and preventive medicine for younger people. That really pays off.

The railroad. When I was a kid the only feasible way to travel distances or transport freight was by train. The railroad represented the wonders of modern technology. To a little guy the huge, throbbing, steam locomotive was the most exciting thing there was. The rail system had replaced the river and canal boats at enormous national cost. A huge part of the national economy was invested in it. And it was one of

the most important sources of employment. In my 90 years I have seen all that change. The railroad has become nearly obsolete. By 1945 the truck, bus, and passenger car had begun to push the railroad out as the prime mode of ground transportation. Soon the airplane was coming on strong too. Together these have left the railroad system with less than 100 years as the primary transporter. The system is still shrinking; and we don't know what to do with what is left of it. It probably has a future, but a smaller one. Nothing like its glory days when I was a child. That is the cost of progress.

The automobile came on with a rush. At about seven I got my first automobile ride when some rich member of the church came to take the preacher and his family for a ride to show off his new Hupmobile. At about nine my father bought his first car, a 1913 Ford Model T. You started the engine with a hand crank out in front of the car. Headlights were gas flames. When it got too dark you got out and lit them with a match. When it started to rain you got out, pulled up the top, and buckled on the side curtains, Service stations did not exist. So to fix a flat tire you had to jack up the car yourself, pry the tire off the wheel, patch the tire or its inner tube with a rubber patch kit that you carried with you, or replace it with a spare if it was blown out, then pry it back on the wheel, pump it up with a hand pump, jack the car back down, and hope for the best. Our worst single day of this was on a family vacation trip, when we had 9 punctures and 5 blowouts. We did not get very far that day. Horse buggies were better, but driving a car was a status symbol.

I think I was only 16 when I got my first real job. It was on the Ford assembly line in New Orleans building Model T's. The swift growth of the auto industry in those nine years still amazes me.

I learned two things there. One was invaluable for the rest of my life. It was not to worry about that next car coming inexorably down the line. Some guys couldn't take the stress. One fellow I remember suddenly yelled, threw down his wrench, and ran screaming out of the factory. For survival you had to learn to think of that next car coming up, not as relentlessly threatening, goading, or compelling you, but as a nice convenience that handed you your next job when this one was finished. The other thing I learned at the Ford plant was that I did not want to work for a living. I guess that is why I became a professor. Even that turned out to be more work than I bargained for. But work never killed anybody. Its that working between meals that you have to watch out for.

Invention of the jet airplane. As was my lifelong habit, I was late in arriving for my century. The Wright brothers had already flown their first airplane at Kitty Hawk in 1903 two

years before I got here. So I missed it. But when I was a kid we could go to the annual county fair to see daring aviators fly those wired cages with two wings. They would do the roll and loop the loop. Marvelous! Of course we boys all made model "aeroplanes" and tried to fly them. They were pitifully underpowered by the twisted rubber bands that we used to turn the propeller. There had to be a better way. I think I was 11 when I invented the jet aircraft, more than 20 years before von Ohain first flew his in Germany. But neither I nor our family cat ever got any credit for it.

Here is how it happened. It occurred to me that my Christmas fireworks could provide the power that I needed for my aeroplane. A skyrocket would give a good takeoff thrust; and it had a built-in tail fin. But it was not sustained enough. I needed something that would continue to provide a thrust. For that the best thing I could come up with was my Roman candles, which shot out a fireball about every six seconds with a good back kick. Not ideal, but the best I could do.

And I needed a pilot for the first jet airplane flight. For this role our family cat eagerly volunteered when I explained to him how famous he would be. So, working in the coal shed so that my parents would not interfere, I built a rather large model airplane of very special design. It consisted only of wings. It was constructed so that it could be attached to the cat, whose body would make the fuselage. On top of the cat the skyrocket and two Roman candles were to be mounted as the jet engine. I did not have to provide a landing gear. I could just let the cat's legs dangle down. For I was sure that cat would hit the ground running.

The big day arrived with my parents conveniently away. But things did not go well from the start. When I tied the wing structure around the cat he clearly began to have second thoughts about the whole thing. I tried to reassure him, and reminded him again of the historic role he was about to play. But he was only partially mollified. Then when I pointed him towards a clear takeoff runway and lit the jet engine he panicked. He spun around to duck under the house. Just then the skyrocket went off and whooshed him under the house at supersonic speed.

Now it was my turn to get scared. If that cat set the house on fire I would really catch it when my parents came home. I had to crawl under there to get him and the fireworks out. But as I went in after him the cat retreated further. And the Roman candles kept shooting fireballs back at me. Somehow I was finally able to get both the poor scared cat and the fireworks out without setting the house on fire. My airplane was a total wreck. The cat was not hurt but he never volunteered again. After that, whenever he saw me coming, he would duck under the house pronto. And that is how I failed to get credit for inventing the jet airplane; and our

pusilanimous cat missed out on his great opportunity for glory.

To the real jet airplane and the atom bomb. It so happened that I was around when some of the momentous events of the 20th century happened. My role in them was totally insignificant, but I was there; and I took my part seriously at the time. Let me tell you about some of them as a way of saying what it is like to have lived for the last 90 years.

Less than 30 years after the jet-propelled-cat fiasco I found myself working in World War II as a mathematician on the defense of B-29 bomber formations. I was not working on the important research and development end of the scientific war effort, but on the operational end with the troops who had to use those complicated weapons in combat. It was called operations analysis. Even so, it was a far cry from being the simple math professor that I had been only weeks earlier, and certainly far from the small-town kid that I have been describing.

I flew one gunnery control test mission at Grand Island, Neb. with Col. Paul Tibbets and his crew. Soon thereafter, they disappeared into some supersecret preparations that later turned into the atomic bomb mission of the Enola Gay over Hiroshima. But when the test explosion was about to be set off at Almagordo they sent an airplane for me to witness it. I was away at the time, so I missed that first atomic explosion.

It was just as well; for at the time I was personally opposed to the use of the atomic bomb. -- Of course the decision was made by President Truman and we in the operations end had absolutely zero influence in it. But that did not stop us from forming our own opinions about the use of those weapons. -- I was opposed to it because our intelligence assured us that there was no need of invasion, and that the war could be finished with conventional air and naval weapons. Moreover I knew that atomic energy was a revolution of such enormous magnitude that there was no experience to predict the consequences of releasing it. We knew nothing about the dangers of nuclear proliferation, mutual deterrence, or those of radiation poisoning.

But I later came to believe that it was the correct decision, given what our leaders knew at the time. It was the humanitarian decision because it ended the war quickly, saved some American lives in the Air Force and Navy, and huge numbers of Japanese that would have been burned to death in cruel fire bombing, had we stuck to conventional weapons.

I have no patience with the dishonest emotional posturing that you now hear in retroactive criticism of the decision. Unfortunately neither can I accept the government's defense that that the alternative was a costly invasion of mainland Japan. That was not going to happen; and the government knew it.

At about the same time -- the spring of 1945 -- I flew to Wright Field in Dayton to see my first real jet airplane flight. It had an unbelievable thrust, just like my cat with his skyrocket power. I tell these stories to illustrate the utterly new and strange experiences that were thrust into my life before I was halfway through my 90-year journey.

The computer. It also happened that in 1952 I found myself at the center of national policy making with respect to that exciting new thing, the electronic computer. At the time I was the first program director in mathematics at the then-new National Science Foundation. I knew very little about the new devices but it was my responsibility to come up with some recommendation in answer to the question: Should NSF make grants in support of the new technology? My crash study of electronic computing included walking through the enormous C-AC at the Bureau of Standards, one of a half dozen computers that then existed. It occupied a large gymnasium with racks of shelves on which rested huge vacuum tubes. I listened to the experts who had developed it.

But I feared that the computer would abolish a lot of office worker's jobs. My report said that NSF should not support it; that the government should leave it to private industry, where the development would be slower; and our society would have more time to adjust to it. For I remembered the troubles caused by our wartime acceleration of atomic energy technology.

I doubt that anybody ever read my report. Of course NSF would support this glamorous new technology. Moreover, as I look back, as one can from the perspective of age 90, I see that I was wrong anyway. The computer made many new jobs instead of destroying them, at least up until recently. Now what I feared back there seems to be happening, but we have had 40 years to adjust and ease the impact of computers replacing people and putting them out of work.

Anyway, when I came to Virginia in 1955, I put this experience to work, got things organized, and we brought the first computer to UVa. Now they are all over the place, essentially built into the life of the University and the community; and taken for granted.

New friends. These yarns do not exhaust my list of firsts in my 90 years. But I want to close this by just one more observation. One thing I can tell you about actually being 90, is that nearly all of the friends of my youth are now dead. I need new friends. And I am happy and fortunate to have found them here at Cardiac Rehab, where we have a common in living, not only long, but well. So thanks again, new friends, for your birthday greetings, and for your gift of dinner at the Boar's Head Inn with my wife of 64 years. I am forever thankful that she is one old friend who has hung in there with

me all these years.

Sincerely

William L. Duren, Jr.