

With the Millennium upon us I thought it would be appropriate to review the chain of events that are responsible for the current state of the world we live in. What struck me most while writing this letter was the number of significant events that occurred in the last 100 years as compared to those in the prior nine centuries combined. It's been an incredible century and I, for one, am glad to have been a part of it.

In the past hundred years:

- 1901: 27 Year old Guglielmo Marconi used radio waves to send the first wireless transmission a distance of 2,000 miles.
- 1903: The Wright brothers flew the first airplane, the "Flyer", at Kitty Hawk, N.C.
- 1905: Albert Einstein theorized special and general relativity from which he derived $E=mc^2$.
- 1906: An 8.3 magnitude earthquake struck San Francisco and the city burned to the ground.
- 1908: Henry Ford introduced the moving assembly line and built the Model-T; the first affordable automobile for the masses.
- 1911: Norwegian Ronald Amundsen became the first man to reach the South Pole.
- 1912: The Titanic sank on her maiden voyage claiming nearly 1500 lives.
- 1917: WWI began. Machine-guns, aircraft, poison gas, torpedoes, and tanks were all used for the first time.
- 1919: The Treaty of Versailles was drafted out of vengeance and led to the rise of Adolf Hitler and WWII.
- 1920: Women got the vote and prohibition went into effect.
- 1925: A Scottish inventor sent the first television broadcast.
- 1928: Penicillin was discovered by Scottish physician Alexander Fleming.
- 1929: The stock market crashed after being driven up by speculators without consideration for corporate earnings.
- 1932: In the midst of the Great Depression Franklin D. Roosevelt passed *temporary* legislation that guaranteed social security and a minimum wage. This is a poor system that should be dismantled and not burden any future generation.
- 1934: Mao Zedong began the "Long March" with 100,000 soldiers. Within 15 years 20% of the world's population lived under communist rule.
- 1938: Five years after being elected Chancellor of Germany, Hitler took Austria and then Poland.
- 1941: The Japanese attacked Pearl Harbor.
- 1945: Berlin fell to the allies and the Japanese surrendered after two atomic bombs were detonated over Hiroshima and Nagasaki. WWII claimed 17M soldiers and 60M civilians. The cold war began and for the first time the ability of our species to survive the devices of its own technology was brought into question.
- 1947: William Shockley developed the transistor at Bell Labs.
- 1948: Israel declared its independence, was recognized by the UN & US, and was attacked by five Arab armies.
- 1950: The Korean War became the first armed conflict to spring from the cold war.
- 1953: New Zealander Edmund Hillary climbed to the highest point on earth, Mt. Everest.
- 1955: IBM installed its first mainframe computer at chemical giant Monsanto Co.
- 1957: The Soviet Union launched the first artificial satellite, Sputnik, into orbit.
- 1959: Robert Noyce developed the first integrated circuit. He later went on to start Intel.
- 1960: William C. Cottrell and a team of Lockheed engineers built the *Discoverer XIII*, the first artificial satellite to orbit the earth and be successfully recovered. Yes, there were 12 prior failed attempts to which unlimited resources were committed. Apparently, getting satellites back from orbit was substantially more difficult than getting them there. Never, never, never give up.
- 1961: The Berlin Wall was built.
- 1963: President John F. Kennedy was assassinated.
- 1968: Martin Luther King was assassinated and the U.S. Embassy in Vietnam was attacked during the Tet offensive.
- 1969: Neil Armstrong walked on the moon.
- 1974: Richard M. Nixon resigned as President. And, over 7,500 life size Terra Cotta clay warriors, buried 22 Centuries ago in central China to guard the tomb of the first emperor, were discovered by a man digging a well.
- 1975: The U.S. pulled out of Saigon. The war claimed 57,605 U.S. soldiers and 664,357 Vietnamese soldiers.
- 1976: 14 year old Romanian Nadia Comaneci scored perfect "tens" in gymnastics at the Montreal Olympic Games.
- 1979: The Shah Reza Pahlavi of Iran was over-thrown by militant Muslims and 52 Americans were taken hostage at the U.S. Embassy in Tehran and held for 444 days.
- 1986: The space shuttle "Challenger" exploded 73 seconds after liftoff. Seven astronauts lost their lives and Americans collectively felt the pain.
- 1989: Pro-democracy student demonstrators were crushed by government troops in Tiananmen Square and the Berlin Wall was torn down re-uniting Germany after 28 years.
- 1990: The Hubble space telescope was launched. It now gives us constant pictures of baby galaxies and black holes.
- 1991: An allied coalition led by the U.S. attacked Iraq in defense of Kuwait's sovereignty.
- 1995: The Murrah Federal Building in Oklahoma City was blown up in America's worst act of domestic terrorism.
- 1996: The first mammal ever, a sheep named Dolly, was cloned.
- 1998: Bill Clinton was impeached??

In the past thousand years:

- 1088: The first modern University to offer a secular degree and a professional school was opened in Bologna, Italy.
- 1095: Pope Urban II launched the first of the 200 Years crusades.
- 1100: Gunpowder was first used in metal guns and iron bombs.
- 1117: The Sea going compass was invented in China.
- 1211: Genghis Khan began his conquest of China and eventually built an empire that stretched from Vietnam to Iraq.
- 1215: King John of England signed The Magna Carte, which contained the seeds of democracy.
- 1348: A third of Europe's population was wiped out by the bubonic plaque.
- 1450: Muslims in Yemen began to brew coffee. By 1880 it was the second most traded commodity in the world.
- 1455: The Gutenberg printing press was invented. Knowledge became mass produced and available to all and as a result an educated literate middle class arose in Europe.
- 1492: With some venture capital funding, Christopher Columbus crossed the Atlantic in an effort to find a trade route to China.
- 1543: Andreas Vesalius published a seven-volume work that, for the first time, correctly illustrated the human anatomy.
- 1582: Pope Gregory XIII instituted the current day Gregorian calendar in an effort to map the passage of time more accurately.
- 1610: Galileo Galilei determined that the earth and Jupiter did, in fact, revolve around the Sun.
- 1656: Dutch astronomer Christiaan Huygens constructed the first accurate clock: the pendulum clock.
- 1666: Isaac Newton hypothesized the force of gravity and derived the mathematical formula to describe it.
- 1761: Englishman John Harrison perfected the sea going clock. Man could now accurately navigate the globe.
- 1769: James Watt patented the first efficient steam engine, which would ignite the industrial revolution. It powered coal mines, textile mills, railroads and ships. Life changed as factories mass-produced affordable goods. People including women and children were exploited for labor as bankers, entrepreneurs, merchants, and managers became wealthy and more mobile than at any other time in history.
- 1776: The U.S. declared its independence from England.
- 1796: English physician Edward Jenner invented the procedure of vaccinating against disease.
- 1826: Joseph-Nicéphore Niepce took the world's first photograph.
- 1829: Chelsea Water Works of London first purified water at a time when cholera and typhoid outbreaks were constant threats.
- 1830: The first steam-driven railway was inaugurated in Liverpool, England.
- 1839: Charles Goodyear discovered the process of vulcanizing rubber, the basic process that's still used today.
- 1844: Samuel Morse transmitted messages instantly on the first telegraph between Washington D.C. and Baltimore.
- 1854: English inventor Henry Bessemer used a blast of oxygen to purify iron and make steel strong enough to build a bridge.
- 1865: The U.S. Civil War ended after four years.
- 1867: Alfred Noble invented dynamite.
- 1876: Alexander Graham Bell invented the telephone and the world became more efficient and at the same time less personal. For the first time in history average people didn't need to be present to communicate directly with each other.
- 1879: Thomas Edison invented the light bulb.
- 1886: Atlanta druggist, John Pemberton, invented Coca-Cola.
- 1895: German physicist Wilhelm Rontgen accidentally discovered x-rays
- 1896: The modern Olympics were restarted for the first time since 393 A.D.

As for myself, in 1998 I married Monica Crowder. From now on, you'll get this annual letter from "us." I'm still at S3, Inc. designing computer chips. Monica is developing software for Hewlett Packard. I got my ham radio license after taking a break from studying for the test 25 years ago. Persistence is a virtue.

Mark & Monica Cottrell

4838 Sandy Lane

San Jose, CA 95124

(408) 369-1113 markc@s3.com, monica_crowder@hp.com, cottrell@jps.net KF6TTB

We began the millennium as an agricultural society in the middle of the dark ages with an estimated world population of 250M and an average life expectancy of 30 years. We communicated primarily face to face, libraries were frequently burned, and intellects were typically ostracized. Today we're an information/manufacturing society living in cities & towns with a population of 6B and an average life expectancy of 75. We communicate as much by pages, faxes, email, and phone calls as in person. Information is viewed as power and intellects are revered. For the next millennium...well in staying with my policy of keeping this annual letter to one sheet, you'll have to wait until next year. Or, give me a call.

Merry Christmas and Happy 1999

Mark A. Cottrell