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Gosh! I Always Wondered...

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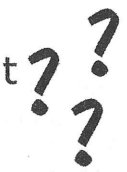

What follows is a very brief timeline of the history of science and technology—just some of the inventions and discoveries that stand out and fit into a few common themes throughout history.

Eleventh Century
Tseng Kung-Liang describes magnetized iron
Compass for navigation is developed in China

Fourteenth Century
Cleansing wounds as an aid to healing noted by Henri de Mondeville, but not routinely practiced
Quarantine station set up for plague carriers in Ragusa in 1377

1543 Copernicus publishes theory that states the Earth and the planets revolve around the sun
1579 First eyeglasses
1608 Telescope invented by Hans Lippershey
1628 William Harvey describes the circulation of the blood, an idea known for centuries in the East and Middle East
1651 Anton van Leeuwenhoek develops the microscope
1687 Isaac Newton publishes the laws of motion and universal gravitation
1701 Giacomo Pylanni inoculates children for smallpox
1714 Fahrenheit develops the mercury thermometer
1742 Anders Celsius develops the temperature scale named for him
1743 Jean Pierre Christian modifies the Celsius scale to place freezing at 0 degrees and boiling at 100 degrees
1753 James Lind uses lemon juice to prevent scurvy
1796 Edward Jenner inoculates child against smallpox using cowpox
1806 Amino acid asparagines is discovered
1822 Charles Babbage develops a calculating machine
1830 Charles Lyell publishes a study discussing the great age of the Earth
1842 Crawford Williamson Long performs surgery with ether; William Norton performs dental surgery with ether publicly in 1846 and is credited with this advance
1844 Patrick Manson notes that mosquitoes might spread malaria
1857 Gregor Mendel uses plants to explore heredity
1858 Charles Darwin and Alfred Russell Wallace discuss evolution; Archibald Scott Couper notes bonding between atoms and role of carbon in organic compounds.
1873 James Clerk Maxwell publishes laws of electromagnetism
1881 Louis Pasteur develops a vaccine against anthrax
1885 Louis Pasteur develops a vaccine against rabies
1896 Antoine-Henri Becquerel finds scientific evidence of natural radioactivity
1902 Walter Sutton notes chromosomes' role in genetics
1905 Albert Einstein publishes his papers on special relativity
1907 Thomas Hunt Morgan uses fruit flies to study mutations and chromosomal role in heredity
1925 Vannevar Bush and the first analog computer
1938 A coelacanth, a fish thought to be extinct, is found in the Indian Ocean
1944 Mark I computer developed with punched tape programming
1946 ENIAC (Electronic Numerical Integrator and Computer) developed
1951 UNIVAC developed with storage on magnetic tape
1953 James Watson and Francis Crick propose double helix structure of DNA
1957 Sputnik launched
1962 Rachel Carson published *Silent Spring*, an account of the effect of chemicals on the environment
1967 Keyboards replace punch cards for data entry
1970 Floppy disks are introduced
1975 Altair 8800 (personal computer) introduced
1981 A carp is cloned in China
1984 Apples, the mouse, and pull-down menus become part of the home computer
1990 First dial-up service for consumers; Tim Berners Lee of CERN develops World Wide Web
1997 Dolly the cloned sheep born in Scotland

Let's stop our timeline there. And then it might be a good idea to sit back for a few minutes and ponder where we are now. The changes in health care alone are staggering. It is worth noting that it has been only in the last 500 years that the West understood the circulation of the blood, and less than that for inoculations, cleanliness in surgery (or any type of medical treatment for that matter!), anesthesia, vaccines, and rational ideas on the spread of disease.

Look at the discovery of some of the things we take for granted—thermometers, computers, compasses—as well as our basic scientific laws that children learn early in life. Yet, all of these are relatively recent.

And the speed is constantly increasing. Each year newspapers print a list of things that incoming college freshmen don't know about. Things like phonograph records, eight-track tapes, rotary phones, party lines, keypunch cards. There was a time when there were no ATMs, drive-through fast-food restaurants, cable and satellite systems, or desktop computing. In the lifetime of the average high school student, we have moved from simple desktop computing with data on floppy disks to PDAs with more computing power than imagined eighteen years ago. For those of us slightly older, the computer evolved from a room-sized machine and vacuum tubes to the much smaller PDAs with more computing power.

In the fifty-one years since Watson and Crick, we have mapped the genome; cloned sheep, goats, cats, fish, and more; genetically modified crops; planted human genes in animals; and discussed the possibility of "designer people." We have put men on the moon and we now search for signs of life on Mars. People live on a space station and the universe has been put on notice that we are here. All this since the simple Sputnik of 1957!

This issue of *STN* celebrates the Science-Technology Division of SLA. Sci-Tech has always been an all-encompassing division taking in the wide range of topics of science and technology, unlike the more specific divisions like Engineering or Chemistry. It allows members to see the breadth of scope and the depth of knowledge. Science and technology are at the heart of our society and provide endless fascination for those willing to open their eyes to the men and women who have discovered and explained so much. It also makes us all aware that what we have discovered is just the tip of the iceberg. There is so much more to know. My guess is it will be as or more interesting than the timeline of the past. So, as the line from a classic movie goes, "Keep watching the skies." And the oceans, and the mountains, and the microscopes, and, well, you get the picture. The world is fascinating and sci-tech gives us the means to explore!

Note: information for this column was found in the *Encyclopedia Britannica*, and at the websites *Timelinescience* [www.timelinescience.org] and *History of Science and Technology: Timeline* [www.crimsonbird.com/science/timeline.htm]