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This newsletter may interest in the genealogy and in particular those related to persons related directly or indirectly to Grace and Clifford Retson.

**Social History –  
Inventions**

My genealogy website is located at <http://www.retson.ca/retsongeneology.html>  
On the left side you will see a list of Family Roots.

Inventions changed the life of our ancestors from one decade to the next. It would be impossible to list every inventions from the beginning of recorded history to date but I have attempted to list many in this article with the intention of integrating important ones in the social history of our ancestors in the future.

**Early inventions before ACE (AD) and Major inventions between 0AD and 1600**

boats, spears, glue, clothing, beds, shoes, mortar and pestle, rope, ceramics, pottery, bread, agriculture, constructed stone monument, mudbricks, and clay mortar, alcohol fermentation, tanned leather, kiln, irrigation, seawall, cotton thread, rowing oars, fired bricks, paved roads, plumbing, potter's wheels wheeled vehicles, silk garments, domestication of the horse, Seal (emblem), ploughing, writing, dry latrines, dry squat toilets, pedestal toilets, all over clay pipe constructed drains papyrus, reservoir, sea-going ships, receipt, ruler, public sewage and sanitation, public bath, docks, balance weights and scales, balance weights, puppetry, dictionary, musical notation, chariot, fountain, scissors, sundial, glass manufacture, rubber, lathe, concrete, saddle, crossbow, coins, systematization of medicine and surgery, documented procedures to: cataract surgery, caesarean section, construct prosthetic limbs, plastic surgery, crane, lighthouse, catapult, cast iron, spiral stairs, wheelbarrow, gears, horseshoe, cheque, potassium nitrate manufacturing, water wheel, dry docks, blast furnace, glass blowing

280-550 AD: Chess in India during the Gupta Empire.

4th century: Mariner's compass

4th century: Fishing reel in Ancient China

347 AD: Oil Wells and Borehole drilling in China. Such wells could reach depths of up to 240 m (790 ft).

589 AD: Toilet paper first mentioned by the official Yan Zhitui (531–591), with full evidence of continual use

650 AD Windmill in Persia

7th century: Banknote in Tang Dynasty China: developed as merchants and wholesalers desire to avoid the heavy bulk of copper coinage in large commercial transactions.

9th century: Gunpowder in Tang Dynasty China: Gunpowder is, according to prevailing academic consensus, discovered in the 9th century by Chinese alchemists searching for an elixir of immortality.

13th century: Rocket for military and recreational uses date back to at least 13th-century China.

13th century: Buttons (combined with buttonholes) as a functional fastening or closing clothes .

1286: Eyeglasses in Italy

15th century: Rifle in Europe

1439: Printing press in Mainz, Germany: invented in the by Johannes Gutenberg before 1440, based on existing screw presses, appeared in a 1439 lawsuit against Gutenberg.

**1600s Rough border for documented genealogy of our ancestors**

1608: Telescope: Patent applied for by Hans Lippershey in the Netherlands. Actual inventor unknown.

1630: Slide rule: invented by William Oughtred  
1643: Barometer: invented by Evangelista Torricelli,  
1656: Pendulum clock: Invented by Christiaan Huygens, first conceptualized in 1637 by Galileo Galilei  
1680: Christiaan Huygens provides the first known description of a piston engine.

c. 1709: Bartolomeo Cristofori crafts the first piano.  
1709: Daniel Gabriel Fahrenheit invents the alcohol thermometer.  
1712: Thomas Newcomen builds the first commercial steam engine to pump water out of mines. Newcomen's engine, unlike Thomas Savery's, uses a piston.  
1733: John Kay enables one person to operate a loom with the flying shuttle  
1738: Lewis Paul and John Wyatt invent the first mechanized cotton spinning machine.  
1742: Benjamin Franklin invents the Franklin Stove and in 1752 the lighting rod.  
1755: William Cullen invents the first artificial refrigeration machine.  
1764: James Hargreaves invents the spinning jenny.  
1765: James Watt invents the improved steam engine utilizing a separate condenser.  
1767: Joseph Priestley invents a method for the production of carbonated water.  
1769: Nicolas-Joseph Cugnot invents the first steam-powered vehicle capable of carrying passengers, early car.  
1774: John Wilkinson invents his boring machine, considered by some to be the first machine tool.  
1776: John Wilkinson invents a mechanical air compressor that would become the prototype  
1783: Claude de Jouffroy builds the first steamboat.  
1783: Joseph-Ralf and Jacques-Étienne Montgolfier build the first manned hot air balloon.  
1783: Louis-Sébastien Lenormand invents and uses the first modern parachute.  
1786: Andrew Meikle invents the threshing machine.  
1789: Edmund Cartwright invents the power loom.  
1790: Thomas Saint invents the sewing machine.  
1792: Claude Chappe invents the modern semaphore telegraph.  
1793: Eli Whitney invents the modern cotton gin.  
1795: Joseph Bramah invents the hydraulic press.  
1796: Alois Senefelder invents the lithography printing technique.  
1797: Samuel Bentham invents plywood.  
1798: Edward Jenner develops the first vaccine, the smallpox vaccine.  
1799: George Medhurst invents the first motorized air compressor.  
1799: The first paper machine is invented by Louis-Nicolas Robert.  
  
1800: Alessandro Volta invents the voltaic pile, an early form of battery in Italy, based works by Luigi Galvani.  
1804: Friedrich Sertürner discovers morphine as the first active alkaloid extracted from the opium poppy plant.  
1804: Richard Trevithick invents the steam locomotive.  
1804: Hanaoka Seishū creates tsūsensan, the first modern general anesthetic.[349]  
1807: Nicéphore Niépce invents the first internal combustion engine capable of doing useful work.  
1807: François Isaac de Rivaz designs the first automobile powered by internal combustion engine.  
1807: Robert Fulton expands water transportation and trade with the workable steamboat.  
1810: Nicolas Appert invents the canning process for food.  
1810: Abraham-Louis Breguet creates the first wristwatch.  
1811: Friedrich Koenig invents the first powered printing press, which was also the first to use a cylinder.  
1812: William Reid Clanny pioneered the invention of the safety lamp which he improved in later years.  
1814: James Fox invents the modern planing machine.  
1816: Francis Ronalds builds the first working electric telegraph using electrostatic means.  
1817: Baron Karl von Drais invents the dandy horse, an early velocipede and precursor to the modern bicycle.  
1822: Thomas Blanchard invents the pattern-tracing lathe, used for making gun stocks, and later, ax handles.

1822: Nicéphore Niépce invents Heliography, the first photographic process.  
1822: Charles Babbage, begins building the first programmable mechanical computer.  
1823: Johann Wolfgang Döbereiner invents the first lighter.  
1824: Johann Nikolaus von Dreyse invents the bolt-action rifle.  
1825: William Sturgeon invents the electromagnet.  
1826: John Walker invents the friction match.  
1826: James Sharp invents and goes on to manufacture the first practical Gas stove.  
1828: James Beaumont Neilson develops the hot blast process.  
1828: Patrick Bell invents the reaping machine.  
1828: Hungarian physicist Ányos Jedlik invents the first rotary electromechanical machine with electromagnets.  
1829: William Mann invents the compound air compressor.  
1830: Edwin Budding invents the lawn mower.  
1831: Michael Faraday invents a method of electromagnetic induction.  
1834: Moritz von Jacobi, a German-born Russian, invents the first practical electric motor.  
1837: Samuel Morse invents Morse code.  
1838: Moritz von Jacobi invents Electrotyping.  
1839: William Otis invents the steam shovel.  
1839: Edmond Becquerel invents a method for the photovoltaic effect, effectively producing the first solar cell.  
1841: Alexander Bain devises a printing telegraph.  
1842: William Robert Grove invents the first fuel cell.  
1842: John Bennet Lawes invents superphosphate, the first man-made fertilizer.  
1844: Independently Friedrich Gottlob Keller and Charles Fenerty invent wood pulp method of paper .  
1845: Isaac Charles Johnson invents Modern Portland cement.  
1846: Henri-Joseph Maus invents the Tunnel boring machine.  
1847: Ascanio Sobrero invents Nitroglycerin, the first explosive made that was stronger than black powder.  
1848: Jonathan J. Couch invents the pneumatic drill.  
1849: Walter Hunt invents the first repeating rifle to use metallic cartridges and a spring-fed magazine.  
1850: Sir William Armstrong invents the hydraulic accumulator.  
1851: George Jennings offers the first the Public, flush toilets, accessible for a penny per visit, and in 1852 receives a UK patent for the single piece, free standing, earthenware, trap plumed, flushing, water-closet.  
1852: Elisha Otis invents the safety brake elevator.  
1852: Henri Giffard becomes the first person to make a manned, controlled and powered flight using a dirigible.  
1853: François Coignet invents reinforced concrete.  
1855: James Clerk Maxwell invents the first practical method for color photography.  
1855: Sir. Henry Bessemer patents the Bessemer process for making steel,  
1856: Alexander Parkes invents parkesine, also known as celluloid, the first man-made plastic.  
1856: James Harrison produces the first practical ice making machine and refrigerator in Geelong, Australia.  
1856: William Henry Perkin invents Mauveine, the first synthetic dye.  
1857: Heinrich Geissler invents the Geissler tube.  
1859: Gaston Planté invents the lead acid battery, the first rechargeable battery.  
1860: Joseph Swan produces carbon fibers.  
1864: Louis Pasteur invents the pasteurization process.  
1865: Carl Wilhelm Siemens and Pierre-Émile Martin invented the Siemens-Martin process for making steel.  
1867: Alfred Nobel invents Dynamite, the first safely manageable explosive stronger than black powder.  
1867: Lucien B. Smith invents barbed wire, modify by Joseph F. Glidden in 1874, leading to end of cowboys.  
1872: J.E.T. Woods and J. Clark invented Stainless steel.  
1873: Zénobe Gramme invents the first commercial electrical generator, the Gramme machine.  
1874: Gustave Trouvé invents the first metal detector.  
1875: Fyodor Pirotsky invents the first electric tram near Saint Petersburg, Russia.

1876: Alexander Graham Bell has a patent granted for the telephone. However, other inventors before Bell had worked on the development of the telephone and the invention had several pioneers.[364]

1877: Thomas Edison invents the first working phonograph.

1879: Joseph Swan and Thomas Edison both patent a functional Incandescent light bulb. Edison designed a high-resistance bulb as part of a large-scale commercial electric lighting utility.

1881: Nikolay Benardos presents carbon arc welding, the first practical arc welding method.[371]

1884: Hiram Maxim invents Maxim gun, ushering in the age of semi- and fully automatic firearms.

1884: Sir Charles Parsons invents the modern steam turbine.

1884: Hungarian engineers Károly Zipernowsky, Ottó Bláthy and Miksa Déri invent the closed core high efficiency transformer and the AC parallel power distribution.

1885: John Kemp Starley invents the modern safety bicycle.

1886: Carl Gassner invents the zinc-carbon battery, the first dry cell battery.

1886: Charles Martin Hall/ independently Paul Héroult invent the Hall-Héroult process for aluminum.

1886: Karl Benz invents the first petrol or gasoline powered auto-mobile (car).

1887: James Blyth invents the first wind turbine used for generating electricity.

1888: John J. Loud invents the ballpoint pen.

1888: Heinrich Hertz publishes a conclusive proof of James Clerk Maxwell's electromagnetic theory in experiments that also demonstrate the existence of radio waves. The effects of electromagnetic waves had been observed by many people before this but no usable theory explaining them existed until Maxwell.

1890s: Frédéric Swarts invents the first chlorofluorocarbons to be applied as refrigerant.

1891: Whitcomb Judson invents the zipper.

1892: Léon Bouly invents the cinematograph.

1892: Thomas Ahearn invents the Electric Oven.

1893: Rudolf Diesel invents the diesel engine

1895: Guglielmo Marconi invents a system of wireless communication using radio waves.

1895: Wilhelm Conrad Röntgen invented the first radiograph (xrays).

1898: Hans von Pechmann synthesizes polyethylene, now the most common plastic in the world.[379]

1899: Waldemar Jungner invents the rechargeable nickel-cadmium battery (NiCd) as well as the nickel-iron electric storage battery (NiFe) and the rechargeable alkaline silver-cadmium battery (AgCd)

## 20Century Inventions

1901: The first motorized cleaner using suction, a powered "vacuum cleaner", is patented independently by British engineer Hubert Cecil Booth and American inventor David T. Kenney.

1903: The first successful gas turbine is invented by Ægidius Elling.

1903: First sustained and controlled heavier-than-air powered flight achieved by an airplane flown at Kitty Hawk, North Carolina by Orville and Wilbur Wright.

1907: The first free flight of a rotary-wing aircraft is carried out by Paul Cornu.

1908: Cellophane is invented by Jacques E. Brandenberger.

1909: The first transmission of images, or television broadcast, by Georges Rignoux and A. Fournier.

1911: The cloud chamber, the first particle detector, is invented by Charles Thomson Rees Wilson.

1915: Harry Brearley invents a process to create Martensitic stainless steel, initially labelled Rustless Steel, later marketed as Staybrite, and AISI Type 420.

1915: The first operational military tanks are designed, in Britain by Walter Wilson and William Tritton; in France, Eugène Brillié, used in battle from 1916 and 1917 respectively.

1928: Penicillin is first observed to exude antibiotic substances by Nobel laureate Alexander Fleming. Development of medicinal penicillin is attributed to a team of medics and scientists including Howard Walter Florey, Ernst Chain and Norman Heatley.

1928: Frank Whittle formally submitted his ideas for a turbo-jet engine. In October 1929, he developed his ideas further.[390] On 16 January 1930 in England, Whittle submitted his first patent (granted in 1932).

1928: Philo Farnsworth demonstrates the first practical electronic television to the press.

1931: The electron microscope is invented by Ernst Ruska.

1933: FM radio is patented by inventor Edwin H. Armstrong.

1935: Nylon, the first fully synthetic fiber is produced by Wallace Carothers while working at DuPont.[394]

1938: Z1 built by Konrad Zuse is the first freely programmable computer in the world.

1938, December: Nuclear fission discovered in experiment by Otto Hahn (Nazi Germany), coined by Lise Meitner (fled to Sweden from Nazi-occupied Austria) and Fritz Strassman (Sweden[citation needed]). The Manhattan Project, and consequently the Soviet atomic bomb project were begun based on this research.

1939: G. S. Yunyev or Naum Gurvich invented the electric current defibrillator

1940, February, Pu-239 isotope (isotope of plutonium) a form of matter existing with the capacity for use as a destructive element(because the isotope has an exponentially increasing spontaneous fissile decay) within nuclear devices — Glenn Seaborg

1940: John Randall and Harry Boot would develop the high power, microwave generating, Cavity magnetron, later applied to commercial Radar and Microwave oven appliances.

1941: Polyester is invented by British scientists John Whinfield and James Dickson.

1942: The V-2 rocket, the world's first long range ballistic missile, developed in Nazi Germany engineer Wernher von Braun during World War II.

1944: The non-infectious viral vaccine is perfected by Dr. Jonas Salk and Thomas Francis.[402]

July 1945: The atomic bomb is first successfully developed by the United States, the United Kingdom and Canada as a part of the Manhattan Project and swiftly deployed in August 1945 in the atomic bombings of Hiroshima and Nagasaki, effectively terminating World War II.

1945: Percy Spencer, while employed at Raytheon, would patent a magnetron based Microwave Oven.

1947: Floyd Farris and J.B. Clark (Stanolind Oil and Gas Corporation) invents hydraulic fracturing technology.

December 1947: The first transistor, a bipolar point-contact transistor, is invented by John Bardeen and Walter Brattain under the supervision of William Shockley at Bell Labs.

1948: The first atomic clock is developed at the United States's National Bureau of Standards.

1948: Basic oxygen steelmaking is developed by Robert Durrer. The vast majority of steel manufactured in the world is produced using the basic oxygen furnace; in 2000, it accounted for 60% of global steel output.

1952: The first thermonuclear weapon is developed by the United States of America.

1953: The first video tape recorder, a helical scan recorder, is invented by Norikazu Sawazaki.

1954: Invention of Solar Battery by Bell Telephone scientists, Calvin Souther Fuller, Daryl Chapin and Gerald Pearson capturing the sun's power. First practical means of collecting energy from the sun and turning it into a current of electricity.

1955: The hovercraft is patented by Christopher Cockerell.

1956: The hard disk drive is invented by IBM.

1957: The laser and optical amplifier are invented and named by Gordon Gould and Charles Townes. The laser and optical amplifier are foundational to powering the Internet.[411]

1957: The first personal computer controlled by a keyboard, the IBM 610, is invented in 1957 by IBM.

1957: The first artificial satellite, Sputnik 1, is built and launched by the Soviet Union.

1958–59: The integrated circuit is independently invented by Jack Kilby and Robert Noyce.

1959: The MOSFET (MOS transistor) is invented by the Egyptian Mohamed Atalla and the Korean Dawon Kahng at Bell Labs. It is used in almost all modern electronic products. It was smaller, faster, more reliable and cheaper to manufacture than earlier bipolar transistors, leading to a revolution in computers, controls and communication.

1960: The first functioning laser is invented by Theodore Maiman.

1961: The first crewed spaceflight is achieved by Vostok 1.

1964: Shinkansen, the first high-speed rail commercial passenger service.

1965: Kevlar is invented by Stephanie Kwolek at DuPont.  
1970: The pocket calculator is invented in Japan.  
1971: Email is invented by Ray Tomlinson.  
1971: The first single-chip microprocessor, the Intel 4004, is invented. Its development was led by Federico Faggin, using his silicon-gate MOS technology. This led to the personal computer (PC) revolution.  
1971: The first space station, Salyut 1 is launched by the Soviet Union.  
1972: The first video game console, used primarily for playing video games is the Magnavox Odyssey.  
1973 - The first fiber optic communication systems were delivered by Optelecom to the U.S. Army and Chevron. 1973: The first commercial graphical user interface is introduced in 1973 on the Xerox Alto. The modern GUI is later popularized by the Xerox Star and Apple Lisa.  
1973: The first capacitive touchscreen is developed at CERN.  
1973–74: The Internet protocol suite (TCP/IP) is proposed by Vinton Cerf and Robert E. Kahn for the Defense Advanced Research Projects Agency (DARPA) ARPANET, creating the basis for the modern Internet.  
1977: Dr. Walter Gilbert and Frederick Sanger invented a new DNA sequencing method.  
1978: The Global Positioning System (GPS) enters service. the first to enter widespread civilian use.  
1979: Public dialup information, messaging and e-commerce services, were pioneered through CompuServe and RadioShack's MicroNET, and the UK's Post Office Telecommunications Prestel services.[421][422]  
1980: Flash memory (both NOR and NAND types) is invented in Japan by Fujio Masuoka while working for Toshiba. It is formally introduced to the public in 1984.  
1981: The first reusable spacecraft, the Space Shuttle undergoes test flights ahead of full operation in 1982.  
1981: Kane Kramer develops the credit card sized, IXI Digital media player.  
1982: A CD-ROM contains data accessible to, but not writable by, a computer for data storage and music playback. The 1985 Yellow Book standard developed by Sony and Philips permitted holding of any binary data.  
1982: Direct to home Satellite television transmission, with the launch of Sky One service, in Europe.[425]  
1982: The first laptop computer is launched, the 8/16-bit Epson HX-20.  
1984: The first commercially available cell phone, the DynaTAC 8000X, is created by Motorola.  
1983: DNA profiling is pioneered by Jeffrey Glassberg and Sir Alec Jeffreys.  
1990: The World Wide Web was first introduced to the public by English engineer and computer scientist Sir Tim Berners-Lee.  
1991: The first commercial flash-based solid-state drive is launched by SunDisk.  
1993: Mosaic, the first popular web browser is introduced  
1994: IBM Simon, World's first smart phone developed by IBM.  
1994: First generation of Bluetooth is developed by Ericsson Mobile. A form of data communication on short distances between electronic devices.  
1995: DVD is an optical disc storage format, invented and developed by Philips, Sony, Toshiba, and Panasonic in 1995. DVDs offer higher storage capacity than Compact Discs while having the same dimensions.  
1998: The first portable MP3 player is released by SaeHan Information Systems.  
2000: Sony develops the first prototypes for the Blu-ray optical disc format, the first prototype player was released in 2004.  
2007: Apple releases the original iPhone, the first smartphone to popularise the touchscreen focused format.  
2010: The first synthetic organism, Mycoplasma laboratorium is created by the J. Craig Venter Institute.  
2010: ASML releases the first prototype of an extreme ultraviolet lithography machine  
2019: IBM launches IBM Q System One, its first integrated quantum computing system for commercial use.  
2020: The first RNA vaccine to be approved by the FDA is co-developed by Pfizer and BioNTech for COVID

This newsletter was sent to individuals who have expressed an interest in this genealogy at some time. If you do not wish to receive future updates, please email me at [jretson@shaw.ca](mailto:jretson@shaw.ca) and indicate so.