



Inventions and Discoveries in the last century and other goodies

1900 Bayer began producing Aspirin in tablet form.

1901 G. Marconi, who believed radio waves could follow Earth's contours, sends first transatlantic morse code message. Satori Kato invents instant coffee. Joshua Lionel Cowen markets the 200 Electric Express, the first Lionel toy train. Pronouncement of the term hormones.

1902 First photo fax sent by German inventor A. Korn (4 years later his equipment made the application available for newspapers between Berlin and Munich). Blickensderfer Electric is the first successful electric typewriter in the U.S. Trans-Siberian Railway across Europe and Asia is completed.

1903 The Wright brothers make first powered flight, max speed: 30 mph. First fully automatic bottle making machine. Pennsylvania Station tunnel through the wide Hudson R, connection to Manhattan completed. Mary Anderson invents windshield wipers.

1905 Albert Einstein constructs his Special Theory of Relativity, $E=mc^2$ where mass could become energy. Pre-Columbian city of Caral, Peru, discovered by Max Uhle, the oldest city ever found in the America's,

dated to 2600 B.C., the same time the pyramids at Giza believed to be constructed. The first movie houses make the American scene.

1906 First voice is carried by electromagnetic radiation energy waves over the radio. Triode vacuum radio tube invented by Lee De Forest of Iowa. Frederick Hopkins discovers the body's need for micronutrients, ie vitamins. The 12.4 mile Simplon Tunnel in Switzerland, the world's longest railroad tunnel, opens.

1907 L. Baekland invents synthetic plastic, resistant to heat, electricity, and chemical action. Vacuum tubes, photocopiers, and electric washing machines were first used. Tower refiner for gasoline and petrol production developed. Fritz Haber invents way to make ammonia, paving the way for fertilizing.

1908 Gabriel Lippman produced the first color photo plate. Eugene Laos is the first man to produce sound on film strip.

1909 Explorer Robert E. Peary is the first man to reach the North Pole.

1910 Pronouncement of the term vitamins by Polish-American Casimir Funk. Incandescent bulbs last 1,000 hours. Union Pacific RR debuts use of radio; radio waves travel at 186,00 miles per second.

1911 Stainless steel is patented by German scientist P. Monnartzers. Gyrocompass invented by Elmer A. Sperry. Explorer Roald Amundsen, of Norway, is the first man to reach the South Pole. Hiram Bingham discovers the lost city of the Incas, Machu Picchu.

1912 The first 35mm camera is invented by Guy Smith.

1913 A sliding fastener called the zip makes its debut. Mass-production assembly-line of the Model T began, one every 10 seconds. Geiger Counter developed by Johannes Geiger. Dr. Alexis Carrel transplants a kidney from one cat to another, the first such scientific endeavor.

1914 The construction of the Lincoln Highway from NY to San Francisco began. First radio broadcast from an airplane. England utilizes first biological safe treatment of public sewage.

1916 Columbia phonograph records broadcasted by L. DeForest on

radio station 2XG.

1918 The toaster is invented.

1919 A British R34 airship first 2-way-crossing of Atlantic Ocean. U.S. Post Office launches airmail operation.

1920 Tree ring dating as an archeological tool is perfected by Andrew E. Douglass. Era of modern radio transmission commences with Westinghouse. First commercial radio station: KDKA. The first automobile, a Duesenberg, equipped with hydraulic brakes. First Johnson and Johnson Band-Aid.

1921 Insulin which promotes uptake of nutrients is isolated by Dr. Frederick Banting, Toronto, Canada. Liver extract developed. Joe Block invents whistling kettle. The first drive-in restaurant: in Dallas, Texas.

1922 St. Louis Missouri unveils first shopping mall. Howard Carter discovers the Egyptian treasures of Tutankamen, the most stunning archeological find of all time.

1923 Juan de la Cierva of Spain invents Autogiro. Garrell A. Morgan invents traffic light. Roy Chapman Andrews discovers rare intact dinosaur eggs in the Gobi Desert of Mongolia.

1924 Super heterodyne radio receiver developed by Edwin Armstrong. Professors William F. Albright and Melvin Kyle discover Bab-Edh-Dhra, the fabled Biblical ruins of Sodom near the Red Sea. A 2.6 million year old skull with an intact fossilized brain discovered in Tong, Kalihari Desert, S. Africa (the Rosetta Stone of human civilization.) Edward Appleton and Samuel Barnett discover ionosphere. Thyroid-stimulating hormone discovered that triggers activity and growth of thyroid gland. Kleenex invented.

1925 To locate objects at a distance, radio detecting and ranging (radar) was invented. Commercial airmail debuts in the U.S.

1926 Massachusetts professor Robert Goddard launches the first successful liquid-propelled rocket, 41 ft. high into the air. B. F. Goodrich

discovers vinyl. Mechanical devise television systems developed in the United States and Britain. The 35mm camera format introduced.

1927 Charles Lindbergh makes the first nonstop transatlantic flight, from NY to Paris. First successful talking picture, *The Jazz Singer*. Trans-Atlantic phone service links London with New York. Formica plastic laminate is created.

1928 British researcher Sir Alexander Fleming discovers penicillin. Scotsman John L. Baird invents the vinyl video disk although it will not become popular until 50 years later when Japanese electronic firms equip video cassette recorders with cameras. First 16mm color film is created. Double Bubble gum premieres. The engineering wonder 6-mile Moffat Tunnel through the Rockies links Denver with Salt Lake City.

1929 Phoebus Levene discovers two kinds of units in the cell nucleus: RNA and DNA. Camera flashbulb introduced commercially. Discovery of ancient Peri Reis Seafaring Map in Turkey shows extraordinary features of a pre-ice Antarctica.

1930 The first tape recorders using magnetic plastic tape are introduced in Germany. The invention of the cyclotron (-atom splitter) particle accelerator by E.O. Lawrence. Freon discovered by Thomas Midgley, Jr, a Du Pont chemist as a replacement for ammonia and methyl chloride in refrigerators, which were flammable (40 years later freon and other chlorofluorocarbons were deemed dangerously destructive to the ozone layer.) W. J. Kroll of Luxembourg initiates research into the world of metal titanium. The French astronomer Bernard Lyot develops a new type of telescope that can see the Sun's corona in full sunlight. British inventor Frank Whittle invents the jet engine. 13.7 million American homes own a radio. I. G. Farben discovers polystyrene. First round-the-world radio broadcast.

1931 Hugh Herndon and Clyde Pangborn make the first nonstop flight between Japan and the U.S. First electric razor. Electron microscope, Germany. The Columbian of the Baltimore and Ohio RR is the first all air-conditioned passenger train in the world.

1932 The first Earth-crossing asteroids discovered. Neutron discovered by Chadwick, England. John Cockcroft and Ernest Walton devise par-

ticle accelerator. First woman to fly Transatlantic solo: Amelia Earhardt. First automobile radio. First V-8 Ford.

1933 First GE room air-conditioner premieres. First drive-in movie premieres in Camden, NJ. Edwin Armstrong of RCA perfects wide-band modulation, FM radio. U.S. astronomer Karl Jansky invents the science of radio astronomy, permitting Earth to see deep into space. The first diesel train is introduced in Nazi Germany. First lightweight aluminum RR passenger car built in the U.S. Chocolate Chip cookies invented. Union Pacific's M-10000 is the first North American aerodynamic aluminum train. Col. Earl J.W. Ragsdale perfects Shotwelding manufacturing process.

1934 The Burlington Zephyr all air-conditioned stainless steel train ushers in the radical design streamlined era; max speed 112 mph. First stereo multi-channel sound transmission over phone lines introduced by Bell Lab scientist A.C. Keller and Leopold Stakowsky and the Philadelphia Orchestra. Physics student Wernher von Braun shoots an oxygen-alcohol rocket 7,900 ft. into the air. J.F. Cantrell opens the first coin laundromat in Fort Worth, Texas.

1935 Carl and Gerty Cori discover the chemical basis of how glycogen works as fuel for human cells. Hiawatha sets a new RR world record of 128 mph. British and German scientists introduce the world to crystal-clear plastic. Pan American Airways flies the first passenger route over the Pacific. Captains A. Stevens and O. Anderson reach a record of 72,395 ft. (almost 14 miles) in a stratosphere balloon sponsored by National Geographic and the USAAC. I. G. Farben invents magnetic tape. The first in the world regular television broadcast, using Vladimir Zworykin's TV camera, is watched in Berlin, Nazi Germany. Parking meters introduced in the United States. (OK)

1936 Kodak introduces Kodachrome color film. First television broadcast of an Olympics, during the Berlin Olympics. Square D circuit breaker invented. Erwin W. Muller invents the field-emission microscope. The streamlined DC-3 airplane enters passenger service, max speed: 198 mph.

1937 Xerography (forerunner to Xerox copier technology) invented by Chester Carlson. The shopping cart invented by Sylvan N. Goldman.

Colchicine, a chemical that artificially doubles chromosomes in plants discovered by Al Blakeslee, Amos Avery and Bernard Nebel. Nylon developed by DuPont. Insulated window glass premieres. The importance of Niacin is identified. Railroad welded track is first employed on heavy-duty service, in upstate New York.

1938 Hungarian Lazlo Biro invents the ball-point pen utilizing a quick-drying ink. Kodak introduces the first camera with a built-in photo-electric exposure meter. Chemist Otto Hahn in Nazi Germany splits atoms of uranium producing a reaction of 200 million electric volts of energy (nuclear fusion). German Dr. Wilhelm Koenig discovers a 2,000 year old electric battery in an archaeological dig at Khujut Rabu'a, Iraq. American James Wyld designs an engine that uses fuel instead of water or air to cool itself. First contact lens is made. World record for a steam locomotive: 126 mph in UK. The first E-type diesel electric Super Chief runs between Chicago and Los Angeles, providing fast 39½ hour service. Airborne radar development in Britain is practical. Macklanburg-Duncan tube caulk invented. American Dr. Matthew W. Sterling discovers an archeological site in the remote jungles of southern Mexico that lead to the discovery of the Olmec civilization, pre-dating Columbus by 2,500 years. Fluorescent bulbs last 1,500 hours.

1939 Nazi Germany produces the first jet, powered by a gas-turbine engine. Pan Am conducts first transatlantic travel between the U.S. and Europe. Owens Corning fiberglass insulation premieres. The biggest streamlined steam engine in the world, the Pennsylvania 6-4-4-6, debuts in N.Y. The Santa Fe, Southern Pacific, and Union Pacific build the finest streamlined passenger train station in the West, in Los Angeles. The Silver Meteor offers the first deluxe reclining seat-equipped service between New York and Florida, bringing the list of luxury streamliners in America to 82. Pre-cooked frozen food debuts. The revolving Sawyer View-Master 3-D (stereo) viewer and reels, invented by William B. Gruber, commercially introduced. Oxford chemists Howard Florey and Ernst Chain create a method for making penicillin practical. Nylon, built from synthetic rubber compounds, invented by DuPont scientist Wallace Carothers of Harvard, is sold commercially. Silk stockings replaced by Nylon.

1940 Walt Disney's Fantasia debuts, first commercial use of stereophonic sound in a movie. An Oldsmobile is the first car with an auto-

matic transmission.

1941 Aerosol spray developed. Enriched white flour standards first enacted, as a war measure food program. Streamlined Electroliners initiate service (Chicago-Milwaukee), the finest interurbans ever built. Nazi Germany builds the first successful rocket-propelled combat aircraft. Initial synthesis and identification of the transuranium elements. First push-button phone produced. The largest freight locomotive in the world at 560 tons, the Union Pacific Big Boy (132 feet) 4-8-8-4, debuts.

1942 World's first atomic chain reaction test, led by Enrico Fermi. Rocket A4 (also known as V-2) rises 52 miles from Peenemunde, Nazi Germany, world's first spaceship; Age of Supersonic Flight begins. Maxwell House Instant coffee debuts. U.S. Department of Agriculture achieves a way to extensively employ penicillin, the most important antibiotic of the century. Jacques-Yves Cousteau and Emile Gagnan invent scuba-diving Aqua-Lung. J.S. Hey discovers solar radio emission.

1943 Chemist Selman Waksman and Albert Schatz discover a way to combat tuberculosis, meningitis, and infections of the lung. The world's first operational atomic reactor was built at Oak Ridge, Tennessee. World's first programmable computer, a top-secret code breaking machine, Colossus, invented by Briton Tommy H. Flowers, a telephone engineer at the Post Office research station in London, uses vacuum-tube technology, hundreds of times faster than any experimental computer using electromagnetic relays. U.S. Army Air Force conducts first intentional scientific flight into an eye of a hurricane to collect science data, near Houston, Texas.

1944 Scientific researchers Oswald T. Avery, Colin MacLeod, and Maclyn McCarty discover that DNA carries genetic information (what the molecule looked like and its code would not be known for nine more years.) Dr. Ernest Charlton, GE scientist, announces x-ray machine that can take pictures through a foot of steel. Navy Comdr. Howard Aiken in collaboration with IBM and Harvard developed an automatic calculator computer, the Mark I, with some 2,000 electronic tubes and 500 miles of wire. The X-4 built by Nazi Germany is the first remote-controlled radio-guided missile. Also built by Nazi Germany, the Wasserfall is the first rocket with an infrared homing system.

1945 First Atomic bombs produced, made of plutonium and uranium. First time 650 billion units of penicillium produced a month. Edwin L. Peterson invents answering machine. First Vista Dome, allowing a 360-degree view, passenger railroad car built in the world by Budd Co. DuPont vinyl flooring debuts.

1946 First generation mobile cellular telephone service instituted by AT & T; very limited & expensive. The first all-electronic 160,000 watt computer, using 18,000 triode vacuum tubes, (ENIAC) goes into operation at the University of Pennsylvania. A new lens that could take normal, wide angle and telephoto camera pictures is released by Zoomar. U.S. Navy rear admiral, computer wizard Grace Murray Hopper develops COBOL computer language. Transcontinental passenger service between NY and Bournemouth/London and Rio de Janeiro instituted on TWA. Sherwin Williams latex paint debuts.

1947 Tide synthetic detergent premieres. The first microwave and instant Polaroid camera is sold commercially. Chuck Yeagar breaks the sound barrier (Mach 1: 761 mph at sea level) in X-1 jet, the first manned supersonic flight by a rocket-powered craft. Holography is invented by Dennis Gabor. The first transistor, short for transfer resistor, that switches and controls electronic currents was developed at Bell Telephone Laboratories. Offshore oil drilling commences. Discovery of ancient Dead Sea Scrolls in Qumran announced.

1948 Long-playing vinyl record invented by Dr. Peter Goldmark. The antibiotic Aureomycin developed. The first junction transistor, a microscopically thin silicon sandwich of n-type and p-type silicon, devised by physicist William Shockley of Bell Telephone Laboratories.

1949 An unprecedented 7-year long project by the National Geographic Society and Palomar Observatory at California Institute of Technology to map the universe to a depth of one billion light-years taking 1,758 astronomical photographs commences. Discovery of cortisone, a hormone that reduces inflammation and decreases allergy symptoms.

1950 Earl John Hilton invents the credit card. Chrysler announces low-priced automatic transmission. The Taylor Aerocar appears, a car that converts into an airplane, range 300 miles, at 105 mph.

1952 Sony of Japan markets the first pocket-sized transistor radio. Super Dome passenger service is inaugurated on the Milwaukee Road Olympian Hiawatha. First rabbit ears TV antenna debuts. British de Havilland Comet, the world's first jet passenger airliner, max speed: 526 mph, completes London-Rome-Beirut-Khartoum-Entebbe-Livingstone-Johannesburg-route, in 24 hours.

1953 Secrets of DNA uncovered, at Cambridge University by James Watson and Francis Crick. DNA is the human genetic code shaped like a twisted staircase called the double helix. Polio vaccine developed by Dr. Jonas Salk. TWA institutes first non-stop transcontinental service, between Los Angeles and NY. Sir Edmund Hillary scales the world's highest peak: Mt. Everest at 29,028 ft. IBM unveils the 701 computer.

1954 Texas Instruments invents the silicon transistor. TV dinner debuts. The first H-bomb, a thermonuclear fusion reaction, vaporizes the entire island of Bikini, a TNT equivalent 1000 times more powerful than the A-bomb of Hiroshima and more powerful than the combined power of all the weapons fired in all the wars of history. Nuclear submarine Nautilus launched.

1955 Low-temperature field-ion microscope that can view individual atoms developed by Erwin W. Muller.

1956 Alexander M. Poniatoff completes a machine that videotapes a live television image. First IBM portable electric typewriter. Wernher von Braun launches a Redstone rocket 682 miles into the air. Czech inventor O. Wichterle creates process to make soft contact lenses. Crest fluoride toothpaste debuts. First Zenith TV remote control.

1957 Two hundred miles above the Earth, Soviet Sputnik I is released, the first object built by humans to orbit Earth. Stereo debuts on a mass market scale and transforms the reality of sound. Dr. William Kolff creates the first artificial heart. Velcro developed. Corning Glass Ware develops a ceramic harder than steel, lighter than aluminum, stronger than glass: Pyroceram. Char-Glo gas barbecue grill invented. Robert Howard invents the dot matrix printer.

1958 NASA launches its first satellite, the TRW-built Explorer I. Van

Allen belts discovered. Two hormones discovered: one affects rhythm of sleep and wakefulness (melatonin) the other influences rate of growth (human growth hormone.) The first tiny integrated computer circuit devised by Jack Kilby of Texas Instruments; a refinement design by Robert Noyce of Fairchild gave both men credit for the invention, but this change to 3rd generation hardware did not take hold until the mid-nineteen sixties with IBM's 360's.

1959 Silicon chips are made. Bonanza is the first television series to air in color. X-15 conducts first powered flight. *National Geographic* publishes first color photos of deep outer space, including the Andromeda constellation.

1960 Laser pulse beams come into existence when Theodore Maiman concentrates photons at Hughes Research Labs, Malibu, CA. Xerox copy machines become practical. Luther Simjian invents ATM. Echo I becomes the first communications satellite to relay radio signals to Earth. Lawyer, novelist Norwegian explorer Helge Ingstad discovers thousand-year old ancient Viking village in Newfoundland. There are 78,000 aircraft in the world; in 2020, global commercial air transport worldwide is nearly 24,000. The first electric leaf blower is invented.

1961 The first light-emitting diode (LED) is invented by Nick Holonyak, Jr. Soviet cosmonaut Yuri Gagarin becomes the first man in space to survive. Astronaut Alan Shepard is the first American in space. TWA is the first airline to screen in-flight movies. Physicist Ali Javan produces the first stream of continuous laser; lasers are now used for surgery, surveying, cutting and measurements. Professor Kenan T. Erim finds great treasure at Aphrodisias, ancient Greco-Roman city in sw Turkey. A gigantic engineering rescue mission that saves ancient architectural treasures on the Nubian Nile from destruction, including Abu Simbel, in cooperation with UNESCO and the Egyptian Antiquities Organization, commences. Black and Decker cordless drill, IBM Selectric typewriter, Pampers disposable diapers, DuPont/Teflon cookware and GE Toaster oven debut.

1962 Telstar launched by AT & T becomes the first satellite to relay live TV across the ocean. First hovercraft air-cushioned vehicles for ferry service built by Vickers-Armstrongs of Great Britain. First modem is introduced in the U.S. commercially: Bell 103 modem. First American

to orbit the Earth: John H. Glenn. Holographic pictures become greatly improved with the application of laser.

1963 The cassette tape is unveiled by the Dutch firm Philips. Quasars discovered; centers of extremely remote galaxies.

1964 Second generation cellular telephone introduced with a 152-158 mhz band and about 11 non-digital channels available per geographic location. A new age of high-speed passenger trains debuts with the operation of the Shinkansen Bullet trains in Japan; at 131 mph. Permanent Press fabric debuts. Xerox introduces fax machine. SR-71 U.S. spy-plane hits the air. First lung transplant. Torpedo-shaped jet powered car, Spirit of America, driven by Craig Breedlove breaks land speed record at 539 mph.

1965 The first commercial satellites to regularly relay both TV and phone calls between the U.S. and Europe hit the atmosphere over the equator. The first nuclear power plants use Watlow high watt density cartridge pressurizer heaters. A new method in print production developed by Max Matthews to store typefaces in digital form within a computer replaces glass and film. The PDP-8 created by Digital Equipment Corporation of the America marks the first true minicomputer; \$18,000 for 4K data storage. Sony introduces portable video recorders for consumers. DuPont chemist Stephanie Kwolek discovers Kevlar, 5x stronger than steel; perfect for bullet proof vests.

1966 Texas Instruments unveils first handheld calculator. Luna X first spacecraft to orbit moon. NORAD Command Center fully operational. Ray Dolby invents a complex circuit that reduces static on recordings, known as Dolby Noise reduction; very expensive. Nick B. Clinch leads the American Antarctic Mountaineering Expedition to the top of Antarctica's highest peak at 16,067 ft. Surveyor I spacecraft lands on the moon and begins transmitting the first of 10,338 pictures.

1967 Dr. Christiaan Barnard of South Africa performs the first human heart transplant. The first supermarket laser devise, a retail bar-code scanner, is installed in Cincinnati. Discovery of pulsar stars. A United Aircraft TurboTrain attains 170.8 mph between New Brunswick and Princeton Junction, breaking the U.S. record. The world's fastest typesetting machine, the Linotron which sets type at 1,000 characters per second, is placed in operation in the U.S. Government Printing Office.