Transportation

1929-1959

1929-1939

The Great Depression

Image Source: Library of Congress

Franklin D. Roosevelt Library

Image Source: U.S. Dept. of Energy

Farmers whose topsoil blew away joined the sod caravans of "Okies" on Route 66 to California, 1935

Image Source: Library of Congress

1939-1945

World War II

1943

Programmable Computer

Who: J. Presper Eckert and John Machly (Inventors) and U.S. (Funding)

Where: USA

Why: Computers have been critical elements in transportation innovations that have occurred ever since the ENIAC.

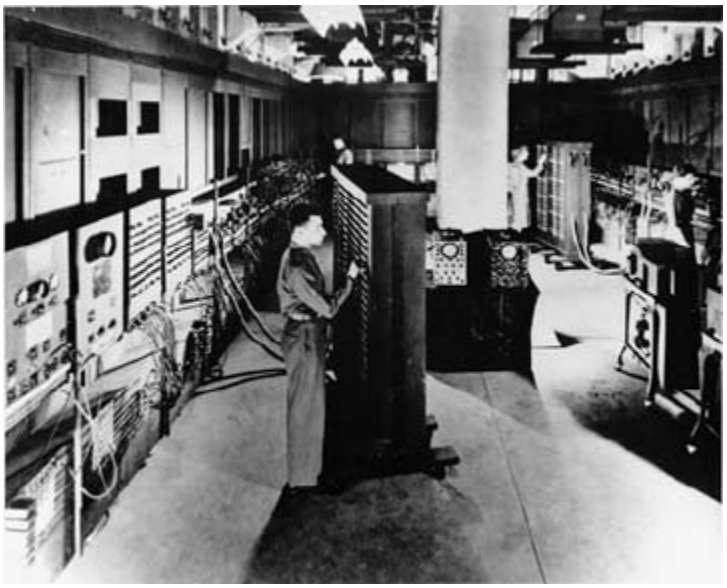


Image Source: National Archives

The first programmable electronic computer was built by J. Presper Eckert and John Machly with funding from the U.S. military which needed a means to calculate target accuracy. The resulting ENIAC contained over 17,000 vacuum tubes, 6,000 manual switches and 5 million soldered joints. It covered 1800 square feet of floor space, weighed 30 tons, and consumed 160 kilowatts of electrical power. Today, computers are substantially smaller. In cars, they control the transmission, temperature and even help drivers apply the brakes. Advanced systems aid navigation and help control transport by air, land and sea. Computers hooked into satellite systems can keep track of every package a company ships.

1946
Ballistic Missile

Who: German Government

Where: Germany

What: Considered the beginning of the space age.

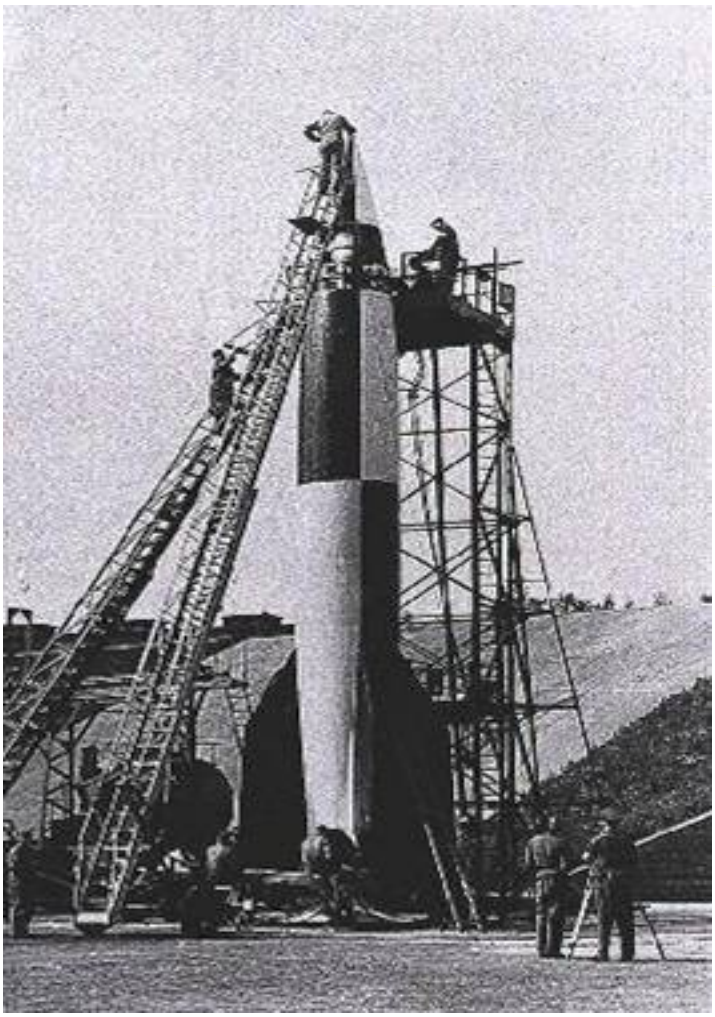


Image Source: NASA

The *V-2 rocket* or *Vergeltungswaffe 2* (Reprisal Weapon 2) was an early ballistic missile used by the German Army during the later stages of World War II against mostly Belgian and targets. The V2 was unmanned. At launch it would propel itself for a short time on its own power, and its navigation system would direct it towards its target. After engine shutdown it would continue on what is basically a free-fall trajectory (hence the term ballistic). It's development is considered the beginning of the space age. The V-2 rockets were initially used to measure the earth's upper atmosphere. Prior to this, ballons were used.

1951

Nuclear Energy

Image Source: Argonne National Laboratory

Who: U.S. Government

Where: USA--Idaho

Why: First generation of electricity using nuclear energy.

The first successful experiment with nuclear fission was conducted in 1938 by German physicists Otto Hahn, Lise Meitner, and Fritz Strassman. During World War II, a number of nations embarked on crash programs to develop nuclear energy, focusing first on the development of nuclear reactors. The first self-sustaining nuclear chain reaction was obtained at the University of Chicago by Enrico Fermi inn 1942. Reactors based on his research were used to produce the plutononium bomb dropped on Nagaski, Japan. Several nations began their own construction of nuclear reactors at this point, primarily for weapons use, though research was also being conducted into their use for civilian electricity generation. Electricity was generated for the first time in 1951 by the EBR-1 nuclear reactor housed in an experimental station near Arco, ID. The reactor produced about 100 kW, enough to power 4 light bulbs.

1953

Practical Solar Cell

Who: Gerald Pearson, Daryl Chapin and Calvin Fuller (Inventors) at Bell Laboratories

Where: USA

What: A practical solar cell that can run everyday equipment

Image Source: AT&T Bell Labs

While researching silicon for its possible applications in electronics, Gerald Pearson (left in photo), a physicist at Bell Laboratories inadvertently made a solar cell that is far more efficient than previous solar cells made from selenium. Two other Bell scientists - Daryl Chapin (middle) and Calvin Fuller (right) - refine Pearson's discovery and come up with the first solar cell capable of converting enough of the sun's energy into power to run everyday electrical equipment.

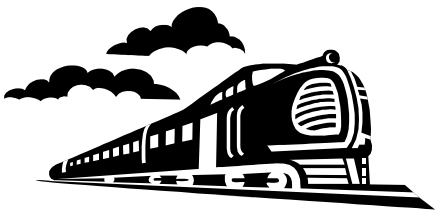
1956

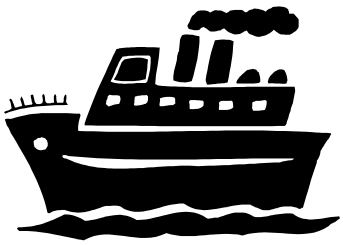
Federal-Aid Highway Act

President Eisenhower signs this legislation authorizing the construction of a limited-access interstate highway system. Systemized numbering of U.S. highways and roads is established. Odd numbers represent north-south highways and even numbers represent east-west.

1957

Air Travel





For the first time, air travel has more passengers than rail travel in the U.S. The advent of faster and more economic jet travel also contributes to the decline of transatlantic ocean liners.

1957

Satellite

Who: Soviet Union

What: Ballistic missile marks the beginning of the beginning of the space age.

Why: The Sputnik program demonstrated the potential for space flight by humans. The surprise launch of Sputnik 1 also led to the creation of NASA and major increases in U.S. Government spending on scientific research and education.

Image Source: NASA

A satellite is any object that orbits another object. Sputnik 1 was the first artificial satellite-- launched in October 1957. Satellites have many functions including communications support, observation of earth for mapping and military intelligence, navigation, etc. One month later, Sputnik was launched carrying first living passenger, a dog named Laika. The mission planners did not provide for the safe return of the spacecraft or its passenger making Laika the first space casualty.

1958

Solar Satellite

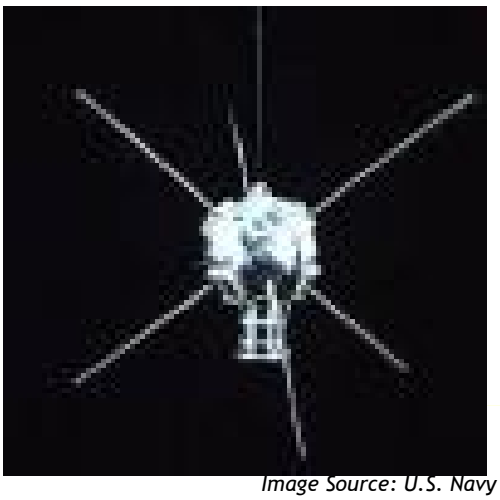


Image Source: U.S. Navy

Who: U.S. Navy

Where: USA

What: Solar-energy proved itself a dependable source of power for space operations.

The first solar-powered satellite, Vanguard I, was the second artificial satellite successfully placed in earth orbit by the U.S. Vanguard was built by the. Navy and launched from Cape Canaveral, Florida in March 1958. At present (2006), it is the world's longest orbiting man-made satellite. (Vanguard predecessors, Sputniks I and II and Explorer I have long since fallen out of orbit.) Only six inches in diameter and weighing just 3 pounds, Vanguard was described by Soviet Premier Nikita Khrushchev as "the grapefruit satellite." At first the Navy rejected solar cells for the project viewing them as an untried technology. Dr. Hans Ziegler argued that conventional batteries would run out of power in days, silencing millions of dollar worth of electronic equipment while solar cells could power a satellite for years. The Navy finally compromised by using a dual power system of chemical batteries and solar cells on the Vanguard. Just as Ziegler predicted, the batteries failed after a week or so, but the solar cells kept operating. Despite solar cells' success, NASA continued to doubt the technology's ability to power more ambitious space ventures, viewing solar cells as a stopgap measure until nuclear power systems became available. But solar engineers kept designing more powerful solar cell arrays. Nuclear energy, in contrast, never powered more than a handful of satellites. Since the late 1960s, solar cells have become the accepted power source for the world's satellites.