May 17th

Frank Marion Wanlass

Born: May 17, 1933;

Thatcher, Arizona
Died: Sept. 9, 2010

While working at Fairchild Semiconductor [Oct 1], Wanlass invented the complementary metal oxide semiconductor (CMOS), the technology employed in most modern microchips.

CMOS drew six times less power than the bipolar logic circuits used at the time, which made them well suited for battery-powered devices. However, one drawback were their slower speed, but smaller lithography and the newly discovered silicon-gate process enabled CMOS to eventually compete in performance with bipolar and conventional MOS.

Wanlass patented the technology as "Low Stand-By Power Complementary Field Effect Circuitry," filed on June 18, 1963 (US Patent 3356358) just a few months before he quit Fairchild.

He left because Fairchild announced that it had "no immediate plan to use a new technology" before he had even completed the project. He joined a start-up, General Microelectronics, where the first commercial MOS product was released in 1964, a few months ahead of Fairchild belated efforts.

By the end of the 1960's, a single MOS integrated circuit could contain 100 or more logic gates, each containing multiple transistors, making the technology particularly attractive for building computers.

The first computer to be fashioned out of CMOS chips was the D200 [Dec 9] in 1967.

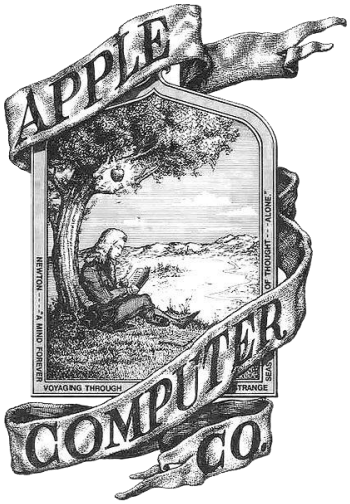
Ronald Gerald Wayne

Born: May 17, 1934;

Cleveland, Ohio

Wayne, one of the three co-founders of Apple Computer [April 1], left the company just 12 days after it was established, selling his 10% share for $800.

In that short time, he'd drawn the first Apple logo: a wood-cut illustration featuring Sir Isaac Newton, written the company's partnership agreement, and drafted the Apple I [June 29] user manual.



The First Apple logo. Drawn by Ronald Wayne.

He left because the partnership imposed unlimited personal liability on the three co-founders, irregardless of which partner incurred the debt. Although this was a fairly standard condition, Wayne had personal assets that creditors could seize, unlike Steve Jobs [Feb 24] and Steve Wozniak [Aug 11], care-free 21 and 25 year-olds.

Wayne has often stated that he doesn't regret selling his share as he made the "best decision with the information available to me at the time". However, as of Jan. 2021, if Wayne had kept his 10% stake, it would be worth over $26 billion.

David H. Ahl

Born: May 17, 1939;

USA

At the start of the 1970's, Ahl ported two popular games, Hamurabi (a text-based strategy game) and Lunar Lander [June 17], from DEC's FOCAL language to BASIC [May 1], and published them in DEC's [Aug 23] educational newsletter, "EDU", which he was then editing. He also called for more submissions, and quickly gathered a considerable number, many sent in by high school students.

Ahl talked DEC into publishing the games as a book, "101 BASIC Computer Games" (1973), which eventually sold 10,000 copies, which exceeded the number of machines available at the time. Ahl noted that "people were buying three, four, five of them for each computer."

Ahl left DEC in 1974 to start *Creative Computing*, one of the earliest magazines covering microcomputers, which ran for over ten years, until Oct. 1985 [April 7; May 9; Dec 3].

In the meantime, Ahl acquired the rights to his book from DEC, and re-published it in 1978 as "BASIC Computer Games" after porting the code to Microsoft BASIC [Nov 18]. In the early 1980's, it became the first computer book to sell a million copies.

Sales remained strong for years, and spawned similar collections: "More Basic Computer Games" (1979), "Big Computer Games" (1984), and "Basic Computer Adventures" (1984). They can be found online at http://www.atariarchives.org/

Alan Curtis Kay

Born: May 17, 1940;

Springfield, Massachusetts

Kay is known for his pioneering work on object-oriented programming, epitomized by his Smalltalk language. Indeed, Kay has argued that Smalltalk isn't

just a language, but a fresh approach to organizing computation, a more flexible way to map human problems to a machine.

The 'language' went through several iterations: Smalltalk-71 (created as part of a bet), Smalltalk-72, Smalltalk-76, and Smalltalk-80, the first publically available version. Adele Goldberg [July 7] wrote much of the documentation, and Dan Ingalls [Oct 12] implemented many of the early versions.

Kay also proposed the Dynabook concept in the paper "A Personal Computer for Children of All Ages," presented at ACM '72 in Boston, which predicted today's mobile devices and graphical user interfaces.

Kay became the head of the Learning Research Group at Xerox PARC [July 1] in 1971. Although the group didn't produce a functioning Dynabook, it was responsible for the Xerox Alto [March 1], guided by Charles P. Thacker [Feb 26], Butler Lampson [Dec 23] and others. The Alto ran Smalltalk and offered a GUI with overlapping windows, and a mouse pointing device.

Kay once characterized progress in programming languages as a "sunspot" theory, in which major advances took place every 11 years or so; one data point for this hypothesis was the arrival of Smalltalk in 1972.

Kay is a former professional jazz guitarist, composer, and theatrical designer, and an amateur classical pipe organist.

Some Kay quotes:

"The best way to predict the future is to invent it." (1971)

"Lisp [April 15] isn't a language, it's a building material."

Bell Gives Away the Keys

May 17, 1960

C. Breen and D. A. Dahlbom of Bell Labs finished their paper, "Signaling Systems for Control of Telephone Switching," which was published in the *Bell System Technical Journal* in Nov.

Despite the somewhat staid title, the paper held a gold mine of information on the inner workings of AT&T's long-distance telephone network. It even included simplified schematics for the circuits necessary to generate the tones used to control that network.

The paper is often called "the article that gave away the keys to the kingdom," since it helped to spawn "phreaker" culture, including luminaries such as Ralph Barclay [March 20], Joe Engressia [May 25], and Cap'n Crunch (John Draper) [March 11].

However, it was another ten years before phone phreaking entered the mainstream, with the publication of "Secrets of the Little Blue Box" by Ron Rosenbaum [Oct 00] in 1971.

Spacewar! Debut

May 17, 1962

Spacewar! is a space combat game developed in 1962 by Steve "Slug" Russell, in collaboration with Martin "Shag" Graetz and Wayne Wiitanen. In addition, Peter Samson [Aug 16] provided the "Expensive Planetarium" routines that generated an accurate star-filled background.

The game features two spaceships, "the needle" and "the wedge", engaged in a dogfight while maneuvering in the gravity well of a star. Each ship has limited fuel for maneuvering, and a limited number of torpedoes.

Russell, Graetz, and Wiitanen conceived the game at Harvard in 1961, inspired by Marvin Minsky's Minskytron drawing algorithm [Feb 29]. Russell had also just finished reading the Lensman series by E. E. "Doc" Smith and thought the stories would make a good basis for a game.

Spacewar! was implemented on MIT's newly installed DEC PDP-1 [Nov 00], taking around 200 hours to program. Its public debut was at MIT's annual Science Open House in May.

A PDP-1 running Spacewar! Photo by Kenneth Lu. CC BY 2.0.

However, Spacewar! wasn't the first computer game; that was probably the Nimatron [Sept 24], displayed at the New York's World's Fair in April 1940.

Spacewar! would later be distributed through the Digital Equipment Computer Users' Society (DECUS [March 00]), ensuring its widespread adoption [Oct 19]. Indeed, it would become one of the icons of hacker culture [Dec 7], and inspired many other games, such as the first arcade games: "Computer Space" ([Oct 15] 1971), "Galaxy Game" [Sept 00], and Asteroids (1979) [Nov 13]. In particular, Nolan Bushnell [Feb 5] discovered Spacewar! while studying at the University of Utah.

On this day, Graetz presented a paper about the game, "SPACEWAR! Real-Time Capability of the PDP-1", at the first DECUS meeting.

SETI at Home

May 17, 1999

SETI@home (Search for Extraterrestrial Intelligence) is an Internet-based public volunteer distributed computing project conceived of by David Gedye and Craig Kasnoff at the Space Sciences Lab (SSL) at Berkeley.

Packaged as a screensaver, it harnesses a machine's spare processing power to analyze data collected by the Arecibo observatory in Puerto Rico (until it collapsed in Dec. 2020). After a packet of work is completed, the results are sent to SETI@home servers at University of California, Berkeley, and another packet is automatically downloaded.

The system employs the BOINC (Berkeley Open Infrastructure for Network Computing) platform, which has been extended over the years to support other distributed applications, in areas such as mathematics, linguistics, medicine, molecular biology, and climatology.

When the screensaver was released on this day, it became the third large-scale use of distributed computing over the Internet for research purposes, after the Great Internet Mersenne Prime Search (GIMPS) [Jan 3] and distributed.net.

In 1995, David Packard [Sept 7], Gordon Moore [Jan 3], Paul Allen [Jan 21], and Mitchell Kapor [Nov 1], pledged a total of over $4 million to the SETI institute.

AI in Space
May 17, 1999

Remote Agent (RAX) became the first AI system to take primary control of a spacecraft, the NASA Deep Space 1 (DS1) probe, nearly 60 million miles away from Earth. RAX went on to successfully plan onboard activities

Before the mission began, RAX was used to correctly diagnose and respond to simulated faults in the spacecraft's components. According to the RAX team, the AI located errors that might not have been found otherwise, and identified a major design flaw

RAX was written in Common Lisp [Dec 8], and included a planner (EUROPA), a plan-execution system (EXEC), and a model-based diagnostic system (Livingstone). These have been reused since DS1 to support other NASA missions.

There were no reports of the AI failing to open the DS1's pod bay doors [Jan 12], probably because it doesn't have any.

HP's Garage
May 17, 2007

The birth place of Hewlett-Packard (HP), a garage at 367 Addison Ave. in Palo Alto, was officially listed on the National Register of Historic Places as the "HP Garage." It was already a California state historical landmark (no. 976), as of 1987, and often called "the Birthplace of Silicon Valley".

The HP Garage. Photo by BrokenSphere. CC BY-SA 3.0.

The garage (18 by 12 by 8 feet) was built around 1924. It was originally painted brown with green doors and eaves.

HP began restoring it in 2004, installing authentic furnishings and equipment. Sadly, it's not open to the public but you can glimpse it from the street.

Newly married David and Lucile Packard [Sept 7] moved into the first-floor three-room apartment at 367 Addison in 1938, with William Hewlett [May 20] sleeping in the garage.

On [Jan 1] 1939, Hewlett and Packard formed their partnership with a coin toss. After a year, the company moved out of the garage to a rented building.

Minecraft Released
May 17, 2009

Minecraft is a world composed of blocks representing nearly 500 different varieties of material, such as dirt, stone, tree trunks, water, and lava. From these pieces, users have built an enormous range of things, including cities, and even planets.

The electrical and mechanical functionality of constructions took a large step forward with the introduction of redstone power blocks. There are four types:

- Power sources, such as levers, buttons, and pressure plates;
- Power transmitters, such as wires (called dust) and repeaters;
- Signal manipulators that alter the properties of redstone power in some way, such as comparators;
- Powered mechanisms which affect the environment, such as doors, gates, lamps, pistons, bells, and more.

Computer-related systems built with redstone blocks include an ALU, a hard drive, an 8-bit virtual computer, and emulators for the Atari 2600 [Oct 14] and Game Boy Advance [March 23].

Minecraft (then known as The Cave) was initially developed by Markus "Notch" Persson. It was renamed based on a suggestion by RinkuHero from The Independant Games Wiki.

Persson was inspired by a similar 3D building game, called Infiniminer, developed by Zachary Barth, which was released on April 29, 2009.

Barth says that he's tired of questions about how he feels about Minecraft: "the act of borrowing ideas is integral to the creative process. There are games that came before Infiniminer and there are games that will come after Minecraft. That's how it works".

In Nov. 2014, Microsoft bought Persson's company, Mojang, and the Minecraft intellectual property for $2.5 billion.

By May 2020 (its 11th anniversary), over 200 million copies of Minecraft had been sold across all platforms, making it the bestselling video game of all time, with Grand Theft Auto [Oct 21] and Tetris [June 6] in second and third places.