Nov. 20th

RCA Formed

Nov. 20, 1919

Manufacturing vacuum tubes after World War I was problematic due to ongoing lawsuits about who had invented what. For example, John Fleming's [Nov 7] value patent was owned by American Marconi but the Lee de Forest triode patent [Oct 20] was licensed to Western Electric.

Matters became considerably easier on this day after the formation of Radio Corporation of America (RCA) as the retail arm of General Electric (GE),

RCA was constructed from American Marconi which GE had bought earlier in the year, and they also negotiated a series of licensing deals with other companies. Finally the mass production of vacuum tubes was possible, the first of which were the UV-200 and UV-201.

RCA sold about 1.25 million tubes in 1922, rising to 11.35 million by 1924.

Benoit B. Mandelbrot

Born: Nov. 20, 1924;

Warsaw, Poland
Died: Oct. 14, 2010

Mandelbrot is best known for his contributions to fractal geometry, which included coining the word “fractal” in 1975, and his famous 1967 paper on the topic called “How Long Is the Coast of Britain?”

In 1982, Mandelbrot brought fractals into the mainstream with his textbook “The Fractal Geometry of Nature.” The introduction includes the observation:

“Clouds are not spheres, mountains are not cones, coastlines are not circles, and bark is not smooth, nor does lightning travel in a straight line.”

Benoit Mandelbrot (2010). Photo by Steve Jurvetson. CC BY 2.0.

The Mandelbrot set, discovered by Adrien Douady in 1979 quickly became popular as an example of a complex fractal structure arising from the application of simple rules; a beautiful rendering appears on the cover of the Aug. 1985 issue of *Scientific American*.

Mandelbrot himself added the “B” to his name as a middle initial. Some sources suggest that he intended it to recursively stand for Benoit B. Mandelbrot, thereby introducing a fractal into his own name.

Title page of "O froehliche Weihnacht". Aachen Cathedral library.

A supposedly 700-year precursor to the Mandelbrot set was the work of the 13th century Benedictine monk, Udo of Aachen. His contribution was forgotten until mathematician Bob Schipke happened to visit Aachen cathedral while on holiday. He noticed a tiny nativity scene illuminating a manuscript of a 13th century carol, "O froehliche Weihnacht". In particular, the Star of Bethlehem seemed to be a representation of the Mandelbrot set.

"I was stunned," Schipke said later. "It was like finding a picture of Bill Gates in the Dead Sea Scrolls. The colophon [the title page] named the copyist as Udo of Aachen."

Sad to say, this is all an April Fool's joke [April 1], perpetrated by Ray Girvan in 1999. For full details, visit `https://users.math.yale.edu/public_html/People/frame/Fractals/MandelSet/MandelMonk/MandelMonk.html`

World Brain

Nov. 20, 1936

Noted SF author, H.G. Wells, delivered a lecture entitled “World Encyclopedia” at the Royal Institution, which became the first essay in his book, “World Brain” (1938). It described a free, globally available encyclopedia that would help humanity make the best use of information, and so contribute to world peace through the sharing of knowledge.

Wells suggested a possible implementation, based on the use of microfilm: “any student, in any part of the world, would be able to sit with his [microfilm] projector in his own study at his or her convenience to examine any book, any document, in an exact replica”

Another essay in the collection was called “The Brain Organization of the Modern World” which viewed the "World Brain" as “a sort of mental clearing house for the mind, a depot where knowledge and ideas are received, sorted, summarized, digested, clarified and compared.”

Well’s ideas paralleled those of Paul Otlet [Aug 23] who had been working on an encyclopedia printed entirely on microfilm during the 1920's and 1930's, which he called the

Encyclopedia Microphotica Mundaneum.

In July 1945, Vannevar Bush [March 11] took up the idea again when he published "As We May Think" in the *Atlantic Monthly*.

Raymond "Ray" Ozzie

Born: Nov. 20, 1955;

Chicago, Illinois

Between 2005 and 2010, Ozzie was Microsoft's Chief Technical Officer and Chief Software Architect (a post held by Bill Gates until [June 15] 2006).

Before joining Microsoft, he had been best known for his role in creating Lotus Notes [Dec 7], an early example of commercial groupware. As a student, Ozzie worked at the Computer-based Education Research Lab (CERL) on PLATO [July 00], and has often credited his experiences there as the inspiration for Lotus Notes.

Ozzie also worked at Software Arts [Jan 2] for Dan Bricklin [July 16] and Bob Frankston [June 14], and on Lotus Symphony [Feb 14].

In 2005, soon after joining Microsoft he wrote a seven-page, 5,000-word internal memo, entitled "The Internet Services Disruption" which warned that Microsoft's business would be endangered if they didn't respond to the Internet quickly. Subsequently, he led Microsoft's involvement with the Web and cloud computing, including the development of Microsoft Azure [Feb 1].

TX-0 at MIT

Nov. 20, 1956

The TX-0 ("Transistor eXperimental - 0", or "tixo") was perhaps the first general-purpose computer to use transistors (around 3,600 of them). It had been built in MIT's Lincoln Labs during 1955 and was moved to the its Research Lab of Electronics (RLE) on this day.

The TX-0 was essentially a transistorized version of the Whirlwind [April 20], also built at Lincoln Labs, but while the Whirlwind filled an entire floor, the TX-0 fit into a single reasonably sized room.

It utilized the new germanium surface-barrier transistors being produced by Philco, which were significantly faster and more reliable than earlier designs. The only major drawback was that each one cost $40 to $80, compared to about $3 to $10 for a vacuum tube.

Reflecting its familial connections to SAGE [June 26], the TX-0 sported a cathode-ray tube display and a light-pen, which allowed an operator to interact directly with a program as it was running.

The TX-0 (1962 ca.) (c) 2019 Computer History Museum.

The TX-0's speed and interactivity led to some early imaginative forms of programming, including code for writing TV Western scripts [Oct 26], 3D tic-tac-toe, and the "Mouse in the Maze" game. A player could create a maze by removing line segments on a 8x8 grid and place pieces of cheese on the squares. When ready, a virtual mouse would be set free to scurry around the maze in search of cheese. The mouse could run out of energy during its search, but would also remember the paths it had taken to become more proficient in future attempts. A later update added Martini glasses and made the mouse swagger the more it drank. Doug Ross [Dec 21] wrote the logic, and John Ward implemented the user interface.

There are several competitors for the title of first transistorized computer. My money's on the "Manchester TC" ([Nov 16] 1953), but other contenders include the Harwell CADET ([Feb 00] 1955) and Bell Lab's TRADIC ([March 14] 1955).

The TX-0's successor was called the TX-2 [Feb 26]; a TX-1 had been planned, but the project was deemed too ambitious.

The TX-0 was still running in 1983 when it appeared in the first episode of the TV series, "Computer Chronicles" [Sept 00].

"Hacker" Coined

Nov. 20, 1963

The earliest use of "hacker" occurs in the minutes of an April 1955 meeting of MIT's Tech Model Railroad Club (TMRC [Sept 6]). They state that "Mr. Eccles requests that anyone working or hacking on the electrical system turn the power off to avoid fuse blowing."

However, this doesn't capture the current black-hat sense of the word, of a nefarious individual dressed in a hoodie, pounding away on his hardware in a darkened room. The first mention of this kind of hacker appeared on this day in MIT's student newspaper, *The Tech*. The article notes:

"Many telephone services have been curtailed because of so-called hackers, according to Prof. Carlton Tucker, administrator of the Institute phone system. ... The hackers have accomplished such things as tying up all the tie-lines between Harvard and MIT, or making long-distance calls by charging them to a local radar installation. One method involved connecting the PDP-1 [Nov 00] computer to the phone system to search the lines until a

dial tone, indicating an outside line, was found.'"

The first 'mainstream' media reference to hacking was in the August 1980 issue of *Psychology Today* in an excerpt from a Stanford Bulletin Board discussion on the addictive nature of computer use called "The Hacker Papers". Its first movie appearance was in Tron [July 9].

Turbo Pascal

Nov. 20, 1983

Borland Software's [Aug 00] first product, Turbo Pascal, proved to be a sensation. Not only did it compile much faster than similar products, but was hundreds of dollars cheaper (only $49.95), and provided some great tools for developers. The compiler had been developed by Anders Hejlsberg [Dec 2] in Denmark, and Borland had added the user interface and editor.

Hejlsberg went on to be the architect of all the later versions of Turbo Pascal, and of the first three versions of Borland Delphi [Feb 14] in the 1990's.

Before Turbo Pascal's massive success, Borland had been so short of money that its CEO, Philippe Kahn [March 16], had persuaded BYTE magazine to accept a full-page color ad for the software on credit.

Windows 1.0 Ships

Nov. 20, 1985

Prev: [Nov 10] Next: [Dec 9]

A mere two years after its announcement, Microsoft shipped Windows 1.0, a graphical, 16-bit multitasking shell that ran on top of MS-DOS. It featured drop-down menus, mouse support, and the tiling of windows; overlapping wasn't an option although dialog boxes could appear over other windows.

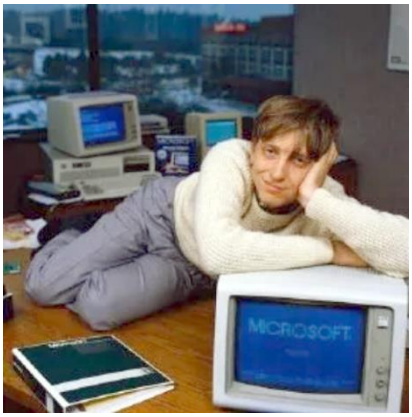
It required a minimum of 192 KB of RAM (but a massive 512 KB if you wanted other programs to run in addition to Windows), two double-sided floppy disk drives, a graphics card, and a hard disk.

Despite a few positive responses, it was mostly poorly received. Critics felt there was too much emphasis on mouse input, and the software suffered from performance issues. *The New York Times* remarked that it was "akin to pouring molasses in the Arctic." It wasn't until Windows 3.1 [April 6] that the OS began to generate significant sales.

The silliest pics of Bill Gates were taken at this time as part of the publicity push, perhaps intended to feature as the centerfold of *Teen Beat* , a magazine aimed at 12-16 year-old girls, which ceased publication in 2007.

Microsoft-insider, Raymond Chen [July 27], has a story related to the hotel visible out of the window in the background (the building with the orange neon sign on its roof):

Gates finished work at a very late hour and didn't want to drive all the way home. Instead, he headed over to the hotel and asked for a room.



Seductive Bill Reclining.
Deborah Feingold / Contributor.

They ask him for a credit card, but he doesn't have one. He's, like, "I work right over there, okay?" And they're, like, "I'm sorry, sir, that's our policy." Bill's like, "okay, fine" and goes back to the office to sleep on the couch.

This is Bill Gates in his irascible, highly temperamental era, so next morning he writes an angry letter to the owner of the hotel lambasting them for mistreating a very valuable member of the community. The owner calls an emergency all-hands meeting, and says, "This is a picture of Bill Gates, he works next door. If he comes in, asks for a room, he gets one. Any questions?"

Note: the picture used was probably not the one included on this page.

In March 2022, some 37 years after v1.0 debuted, Lucas Brooks found an Easter egg in the source – a credits list of developers and a "congratulations" message, buried in the data of a smiley face bitmap. The information was encrypted, and according to Brooks, the tools he needed to extract it didn't even exist at the time of the OS' release.

NetRadio Licensed

Nov. 20, 1995

NetRadio (aka Net.radio and NetRadio Network) was founded by Scott Bourne and Scot Combs in 1994, making it the first Internet-only radio service. On this day, it signed a licensing agreement with the American Society of Composers, Authors and Publishers (ASCAP) which meant it could legally broadcast music over the Internet. This approach became the template for other legal online radio stations to follow.

It used RealAudio [April 3] to stream music, and was soon included as a preset channel in RealMedia and other players [Sept 5].

At its height, NetRadio offered more than 125 stations and attracted more than 50 million listens per month.

Memory Stick

Nov. 20, 1998

At COMDEX, Sony unveiled its "Memory Stick", a removable flash memory card, with up to 128 MB of storage. It looked not unlike a stick of purple chewing gum.

Sony began licensing the technology in Oct. 1999, in a bid to avoid a repetition of its loss in the VHS vs. Betamax . videocassette war [Jan 17]; this approach met with some success, grabbing around 25% of the flash market by 2001.

However the competing SD (Secure Digital) card, jointly developed by Toshiba, Panasonic, and SanDisk, and released in Aug. 1999, eventually became the more popular format.

Sony had lost out again even though the memoy stick had been first to market. Unfortunately, so had Betamax, debuting in May 1975, a year before VHS.

Enemy of the State

Nov. 20, 1998

The suspense thriller, “Enemy of the State”, directed by Tony Scott, was released. A defense lawyer (Will Smith) becomes the target of a corrupt politician and a squad of unscrupulous NSA [Oct 24] agents armed with sophisticated surveillance gear. He finds help from an elderly paranoid surveillance expert (Gene Hackman).

The real-life NSA director, Gen. Michael Hayden, became rather upset by the film’s negative depiction of the NSA, and started a PR campaign to counter the unfair suggestions.

As it later turned out, the kinds of domestic and international surveillance seen in the movie bore an uncanny resemblance to real-life details leaked by Edward Snowden on [June 5] 2013.

Big Rigs

Nov. 20, 2003

Today saw the release of “Big Rigs: Over the Road Racing”, widely considered the worst racing game of all time.

The game permitted cars to drive up or down 90 degree slopes with no loss or gain of speed, straight through 'solid' structures such as buildings, trees, bridges, checkpoints, and other vehicles, and travel off the map into an endless grey void.

If the player held down the reverse key, the vehicle could accelerate to over 1028 times the speed of light, at which point all checkpoints turned green and the player instantly won.

Although the game involved racing against other trucks, they never moved from the starting line. Admitedly, in a later version, they did travel around the track, but always stopped just before the finish line.

Zero Hour Launch Party

Nov. 20, 2005

Microsoft hosted a 29-hour “Zero Hour” launch party for the Xbox 360 [Nov 22] in a 200,000 square-foot aircraft hangar in Palmdale, California, The eXcitement began on Sunday at 7pm.

Five hundred Xbox 360s were set up so the 2,000 invited guests could try out the 18 titles available at launch time.

In the middle of the hangar was a tree decorated with photographs, and attached to its base a wire cage containing two rabbits. This 'installation' referred to the OrigenXbox360.com viral marketing campaign, which was hosted by talking rabbits called Boss and Didier.
