Jan. 21st

Babbage's Son Calculates

Jan. 21, 1888

Charles Babbage [Dec 26] never constructed an Analytical Engine [Dec 23], but his youngest son, Henry Prevost Babbage (1824-1918), did get around to building the mill portion (the arithmetic logic unit) from his father's plans.

On this day, it produced a table of multiples of π, complete to 29 digits, arguably making it the first successful test of a computer. Over twenty years later, in April 1910, the results were published in *The Monthly Notices of the Royal Astronomical Society*, followed by errata in the June issue.

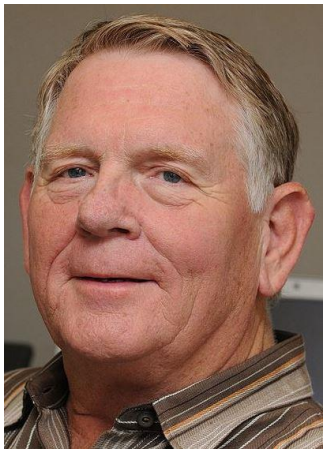
It was probably during this time that Henry assembled six small demonstration sets showing the principles behind his father's Difference Engine No. 1 [June 14]. He sent one of them to Harvard, where it languished until discovered by Howard Aiken [March 8] in the late 1930's, At the time, he was putting together a funding proposal [Jan 17] for his Automatic Sequence Controlled Calculator (ASCC) [April 17], and he later wrote that 'he felt that Babbage was addressing him personally from the past'.

Gary Keith Starkweather

Born: Jan. 21, 1938;

Michigan
Died: Dec. 26, 2019

Starkweather invented the laser printer at the Xerox Webster Research Center in 1967 – the Scanned Laser Output Terminal (SLOT). Aside from controlling the laser by computer, he also found a way to replace the copier's $20,000 spinning mirror with a $10 cylindrical lens.



Gary Starkweather (2009). Photo by Dcoetzee. CC0.

Incredibly, his work generated almost no interest at Webster, and his manager actually threatened to sack anyone who 'wasted their time' on the project.

On the positive side, this encouraged Starkweather to relocate to Xerox's new Palo Alto Research Center (PARC [July 1]) in 1971 where his research was somewhat better received. In particular, Butler Lampson [Dec 23] and Ronald Rider developed a control system for the machine in 1972, which was renamed the EARS printer (Ethernet, Alto, Research character generator, Scanned laser output terminal). It became an important component of the Alto system [March 1].

In 1974 the laser printer concept 'escaped' from PARC when a small group of researchers led by John Ellenby [Nov 10] began buying used Xerox copiers and installing laser heads inside them. Perhaps several dozen "Dover' printers were built and distributed within Xerox and to outside universities.

EARS was finally converted into a commercial product in June 1977, as the Xerox 9700, but only after IBM had released their own laser printer, the IBM 3800 [April 15] in 1975. Xerox estimated that it would sell 600 units at most; the actual number was closer to 10,000.

In his spare time, Starkweather was an avid model railroader.

IBM Antitrust

Jan. 21, 1952

The US Department of Justice's (DOJ) filed an antitrust suit against IBM [Feb 14], charging it with unlawful restraint of trade, and domination of the punch card industry. At the time, IBM owned more than 90% of all the tabulating machines in the US, and manufactured and sold about 90% of all the cards.

A consent decree was issued in 1956, instructing the company to reduce its share of the market to a more reasonable 50%. This was fortuitous timing for Tom Watson, Jr. [Jan 14] who had just taken over as IBM's CEO; he wanted to move the company's focus away from punched card systems towards computers.

IBM was hit by another antitrust suit on [Jan 17] 1969.

Paul Gardner Allen

Born: Jan. 21, 1953;

Seattle, Washington
Died: Oct 15, 2018

Allen and Bill Gates [Oct 28 founded Traf-O-Data [July 00], and the somewhat better known Micro-soft [April 4]. Their partnership had begun at the Lakeside prep school in Washington state, when Allen, aged 14, had befriended Gates, two years younger, because of their shared enthusiasm for computers.

Allen later recalled, "The event that started everything for us business-wise was when I found an article in a 1971 electronics magazine about Intel's 4004 chip, which was the world's first microprocessor. It made me realize that computing was going to be a lot cheaper than it had ever been and that a lot more people would have access to computers."

This quote probably refers to the Intel 4004 ad that appeared

in *Electronic News* on [Nov 15] 1971. Another important motivation [Jan 2] for the pair was the announcement of the Altair 8800 in the Jan. 1975 issue of *Popular Electronics* [Dec 19].

Allen stopped working at Microsoft on [Feb 18] 1983 after being diagnosed with Hodgkin's disease. He recovered, but later discovered that he had non-Hodgkin's lymphoma, which he also beat.

In the meantime, Allen became a noted philanthropist, donating more than $2 billion towards projects in science, education, wildlife conservation, and the arts. His computer-related commitments include the "Allen Institute for Brain Science" (2003), and the "Allen Institute for Artificial Intelligence" (AI2), which he founded in 2013.

Some of his brain science ventures include the "Allen Mouse Brain Atlas" and the "Allen Human Brain Atlas". "Project Aristo" (not "Allen") from AI2 aims to build an AI capable of passing an 8th grade science exam (something many 8th graders have trouble achieving).

His "Living Computer Museum + Labs" in Seattle showcases some beautiful vintage machines, many of which are available for public use.

Allen has a fly named after him, in recognition of his contribution to dipterology [May 15].

Paul Allen and guitar (2013). Photo by Jameswlarsenjr. CC BY-SA 3.0.

Allen played rhythm guitar, and in 2013 released the album "Everywhere at Once" by Paul Allen and the Underthinkers.

Reed-Solomon Code

Jan. 21 1959

Irving S. Reed and Gustave Solomon's five-page paper marked the beginning of coding theory as a major area of computing research. The paper, "Polynomial Codes over Certain Finite Fields," introduced ideas that now form the core of error-correcting techniques for everything from hard disk drives, QR Codes [March 14], to DVD players. The scheme groups collections of bits, which makes it particularly good for dealing with "bursts" of errors.

Reed and Solomon focused on how to encode data, and it was only in 1970 that Elwyn Berlekamp invented an efficient decoding algorithm, and thus made Reed-Solomon codes practical for digital transmission.

IBM 6150 RT

Jan. 21, 1986

The IBM RT (or IBM 6150) was built around the 32-bit ROMP processor, which some people label as the first commercial RISC chip [Sept 22], [Nov 16].

One of its novel aspects was the use of a microkernel, the Virtual Resource Manager (VRM), which allowed multiple OSes to be booted at the same time, including Pick [Nov 30] and AIX.

AIX (Advanced Interactive eXecutive) was IBM's second foray into UNIX territory (after PC/IX [Jan 12]). However, lackluster support, plus some odd changes from standard UNIX, meant it never became popular.

The IBM RT wasn't a great success either, but it was followed by the more popular IBM RS/6000 and the PowerPC [Oct 2].

Digital Be-In

Jan. 21, 1989

Inspired by the 1967 "Human Be-In" held in San Francisco, the first "Digital Be-In" was sponsored by *Verbum*, a digital arts magazine. Verbum president, Michael Gosney, argued (rather unpersuasively) that digital media and desktop publishing were a continuation of the countercultural ideas that had spawned the "Summer of Love".

Verbum went on to produce ten "Digital Be-In"s until 1998, organized to coincide with the annual Macworld conference. Although the first few were mainly an excuse for a party, they gradually became more serious. For instance, they helped kick off the EFF's [July 6] "Blue Ribbon Campaign" for free speech online, and promoted John Barlow's "Declaration of Human Rights in Cyberspace" [Feb 8].

Gosney also managed to unearth key figures from the 1960's "Human Be-In" such as Timothy Leary [May 00], Ken Kesey [May 13, Dec 14], and "Wavy Gravy" (The Grateful Dead's [Oct 3] official clown). It was quite surprising how many of them were still alive. Verbum also helped organize the early Burning Man festivals [March 30].

A "Human Be-In 50th Anniversary celebration" was held in San Francisco on Jan. 14, 2017.

Intel's ATPO/FPO

Jan. 21, 1999

Intel announced that it would stamp unique serial numbers on its processors to help facilitate e-commerce, prevent fraud, and promote digital content protection.

A Core i7-8700 Intel Chip. (c) Intel.

Each CPU has an APTO (Assembly Test Process Order) serial number and a FPO (Finished Process Order) batch number. The APTO appears twice – as five digits and as a QR Code on the processor's edge. The FPO is printed near the middle, and is fairly easy to decode. For example, "L825D011" means:

- 1st letter or digit = manufacturing plant code: (L means Malaysia);
- 2nd digit = Year of production: (2018; the Core i7-8700 was launched in Oct. 2017);
- 3rd and 4th digits = week: (25th week);
- 5th through 8th digits = lot number: (D011).

Intel planned to also have this data available at the OS level, but after numerous complaints about consumer privacy, the company backed off. However, a considerable amount of general information about a processor has been available to OSes since the early 1990's, via the CPUID instruction.

bOinG bOinG Blog

Jan. 21 2000

Boing Boing, the Journal of Energized Fun, edited by Mark Frauenfelder and Carla Sinclair, first appeared in 1988. Together with *Mondo 2000* [March 20], it had a major influence on cyberpunk [Dec 30] subculture, with a circulation of 17,500 copies at one point.

Boing Boing began a website in 1995, and became web-only the following year. Frauenfelder relaunched it as a blog on this day, along with the motto: "Brain candy for happy mutants," and was later joined by four co-editors: Cory Doctorow, David Pescovitz, Xeni Jardin, and Rob Beschizza

Boing Boing's name owes a debt to Frauenfelder's wife's grandfather, who often stayed out late, drinking at a club in LA. When he came home less than sober, his wife pelted him with rolled-up socks, yelling "Boing!" every time one hit him on the head.

Project Chanology

Jan. 21 2008

A "Message to Scientology" video was uploaded to YouTube [Feb 14]. A robotic voice informs the "leaders of Scientology" that "For the good of your followers, for the good of mankind – for the laughs – we shall expel you from the Internet."

At the same time as the upload, the hacker group "Anonymous" launched a DDoS (distributed denial-of-service) attack against the church. This was later assigned the grandiose name: Project Chanology.

It was all in response to the church's earlier attempts to remove an Internet video of an interview with Tom Cruise, one of its more high-profile members. It had been uploaded to YouTube on Jan. 14 by a prominent critic of Scientology, Mark Bunker, and had soon gone viral.

Anonymous' use of DDoS led the church to start calling them "cyberterrorists" who were perpetrating "religious hate crimes." Bunker also asked Anonymous to switch to non-destructive and legal means.

The group gradually changed its tactics. For example, during 2008 and 2009, it persuaded thousands to protest peacefully outside Scientology churches.

For more Scientology, see [Dec 24].