Dec. 31st

Lee L. Boysel

Born: Dec. 31, 1938;

USA

Boysel's research focused on MOS (Metal-Oxide-Semiconductors) technologies in the 1960's at a time when most IC's were being designed around bipolar technology. He designed and fabrication the semiconductor industry's first 256-bit RAM in MOS, and the first MOS IC with over 100 gates.

In 1967, he wrote a manifesto explaining how a computer could be built from a small number of MOS chips, and followed his words with actions when he and Jack Faith founded Four-Phase Systems in Feb. 1968. By 1969 they had created the AL1, an 8-bit MOS processor with eight registers and a 8-bit ALU. The AL1 contained over 1000 gates (about 4000 transistors), and ran at around 1 MHz, nearly ten-times faster than anything else.

The AL1 was shipped sometime during 1969, and was described in an April 1970 article in *Computer Design* magazine.

At the time, the AL1 wasn't called a microprocessor since it formed part of a nine-chip 24-bit CPU using three AL1s for the ALU. However, in the 1990's, it was dubbed one in connection with litigation when Texas Instruments claimed to have patented the microprocessor. In response, Boysel assembled a system in which a single AL1 was used in a courtroom demonstration system.

The AL1 is sometimes called the first microprocessor, along with two other claimants: Bob Booher's D200 [Dec 9], and Ray Holt's MP944 [Dec 28] for the F-14 Tomcat fighter [Dec 21]. However, all of these required multiple chips to implement a fully functional CPU, and so most historians believe that the honor of first microprocessor belongs to the Intel 4004 [Nov 15].

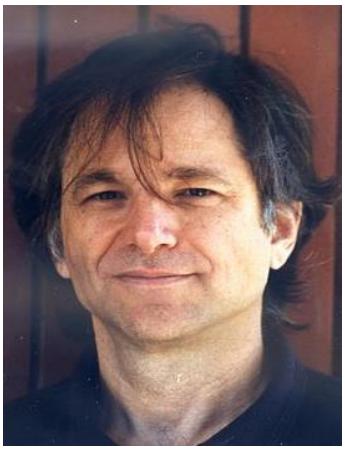
Leonard Max Adleman

Born: Dec. 31, 1945;

San Francisco, California

Adleman is often called the "father of DNA computing", and was also the co-inventor of the RSA encryption algorithm [Sept 6] (RSA is short for Ron Rivest [May 6], Adi Shamir [July 6], and Adleman). His main role in the trio was to attempt to break the systems that the other two proposed. He had conquered 42 of them before Rivest sent him one based on factoring.

Adelman was partly inspired to move from math into computer science by an article on Gödel's theorem written by Martin Gardner [Oct 21] in *Scientific American*. A later article by Gardner in the same magazine popularized the RSA algorithm.



Leonard Adleman (2010). Self Portrait. CC BY-SA 3.0.

Adleman's interest in DNA computing began while reading "The Molecular Biology of the Gene" by James D. Watson (1965), and he noticed that the actions of DNA polymerase were reminiscent of the behavior of a Turing machine [Nov 12]. In 1994, Adleman used a DNA-based computational system to find a seven-node instance of an Hamiltonian path (one that visits every node in a graph exactly once). In 2002, his research group achieved another first when they solved a 20-variable boolean formulae problem using DNA.

Adleman was responsible for the term "virus", according to Fred Cohen [Nov 3]. He was also the math consultant for the movie "Sneakers" [Sept 9], and contributed the line of dialogue, 'a breakthrough of Gaussian proportions'. He later claimed that the Prince of Mathematics needed some publicity.

The Computer Wore Tennis Shoes

Dec. 31, 1969

"The Computer Wore Tennis Shoes", directed by Robert Butler and starring Kurt Russell, was the first movie to have the word "computer" in its title. The story, a comedy, concerns student Dexter Riley (Russell) who is struck by lightning during a thunderstorm while repairing a computer. As luck would have it, this turns him into a calculating wunderkind.

The 'computer' featured in the movie was a tape drive from a Burroughs B205. Perhaps the B205's console was busy, used by Batman [Jan 12].

This was the first in a trilogy of "Dexter Riley" movies, each featuring a scientific mishap involving the hapless student.

Y2K

Dec. 31, 1999

The Y2K (Millennium) bug was probably first mentioned by Bob Bemer [Feb 8] way back in 1971 while he was describing the drawbacks of systems using a two-digit year field (e.g. '71' instead of '1971'). No one paid much attention, even when he brought it up again in 1979 in an article entitled "Time and the Computer" in *Interface Age* magazine. In 1984, Jerome and Marilyn Murray published "Computers in Crisis: How to

Avert the Coming Worldwide Computer Systems Collapse".

People finally started thinking about it in the mid-1990's, and increasingly irate newspaper stories about the imminent computing apocalypse were finally translated into action.

Millions of dollars were spent upgrading software, and Jan. 1, 2000 arrived peacefully. Many hailed this as a sign that the updates had been successful, while others considered this proof positive that the bug had been wildly exaggerated.

The acronym Y2K is due to David Eddy, a Massachusetts programmer, who used it in an e-mail sent on June 12, 1995. He later recalled, "People were calling it CDC (Century Date Change), FADL (Faulty Date Logic). There were other contenders. Y2K just came off my fingertips."

A sign at the École Centrale de Nantes incorrectly displaying the year 1900. Photo by the École Centrale de Nantes. CC BY-SA 3.0.

At the end of 2020, Y2K was back in the news, this time as the Y2020 bug. It seems that some of the solutions to the problem involved a programming trick called a "Pivot Year". If a business didn't have any records older than 80 years old on Jan. 1, 2000, then the sysadmins could choose 1920 as the "pivot year". Then dates contained a two-digit year value of 20 or less would be treated as after 2000 (e.g. "16" would be 2016). If the year was more than 20 then it would be treated as before 2000 (e.g. "52" would be 1952). Of course, this fix will break at the end of 2020. Expect this news story to reoccur for a few more decades, since there's nothing stopping the sysadmins from having chosen 2030 or even 2040.

Two quotes from the "end of days": "I recently sold our New York City apartment and bought a house in a small town in New Mexico."- Ed Yourdin [April 30], computer consultant, 1998.

"The Millennium bug might be God's attempt to confound our language, jam our communications, judge us for our sin..." - Reverend Jerry Falwell in a video produced during 1999.

For other date/time related problems, see [Jan 1].

Regrettable Misuse

Dec. 31, 2004

Daniel Cuthbert became concerned that a website through which he has donated money for Tsunami relief efforts was a phishing scam.

He performed two simple penetration tests: the first was to add `../../../` to the website's URL in an attempt to access the host's higher directories. The action was interpreted as a Directory Traversal Attack (DTA), triggering an Intruder Detection System (IDS), and the police were notified.

Twenty days later Cuthbert was arrested at work (from which he was later fired), and his home searched. On Oct. 6, 2005, Cuthbert was convicted of violating the UK's Computer Misuse Act (CMA) of 1990, fined £400 and told to pay a further £600 in costs.

Judge Quentin Purdy found Cuthbert guilty with 'some considerable regret', but the wording of the Act made it clear that he was guilty.

Zune 2K Day

Dec. 31, 2008

Owners of Microsoft Zune devices [Nov 14] began reporting that they refused to boot (the Zunes, that is). The problem turned out to be a bug in how the clock driver handled the leap year [Feb 29]. Today was quickly nicknamed "Zune 2K" day, in honor of the Y2K bug [two entries back].

The problem fixed itself on Jan. 1, 2009 if the user let the battery run down and then reset the device.

Microsoft said it would issue a bug fix so the problem wouldn't re-occur in 2012, but by then, Microsoft had killed the Zune line.