August 19th

Philo Taylor Farnsworth

Born: Aug. 19, 1906;

Beaver, Utah
Died: March 11, 1971

Farnsworth is one of the trinity of "fathers of television", alongside John Logie Baird [Aug 13] and Vladimir Kosmich Zworykin [July 29].

At the age of 21, he transmitted the first electronic television image. He took a glass slide, coated it with carbon and scratched a single line onto it. The slide was placed in a carbon arc projector which was shone onto the photocathode of a camera tube.

By 1930, Farnsworth had produced an all-electronic television image, this time using his wife, Pem, making her the first person to appear on TV.

Farnsworth had the initial idea for television when only 14 years old. He was plowing his uncle's field, and realized that an image could also be broken into rows, and reassembled as a series of individual lights.

Philo T. Farnsworth (1939). Photo by Harris & Ewing, Library of Congress.

Although he was responsible for the technology, Farnsworth only appeared on TV once. On July 3, 1957, he was a mystery guest ("Doctor X") on the CBS quiz show "I've Got A Secret". He answered questions from the panel as they tried to guess his secret ("I invented electronic television."). They failed.

Farnsworth was less than impressed by how his technology had been put to use: "There's nothing on it worthwhile, and we're not going to watch it in this household, and I don't want it in your intellectual diet" (this addressed to his son).

Edgar (Ted) Frank Codd

Born: Aug. 19, 1923;

Portland Bill, Dorset
Died: April 18, 2003

In a series of IBM reports, and a landmark 1970 paper, "A Relational Model of Data for Large Shared Data Banks," Codd laid out the theoretical basis for relational databases.

Initially, IBM refused to implement his relational model as an actual product because they wanted to preserve the revenue from their hierarchical IMS/DB database [Aug 14]. Belatedly, the company did start a relational project called System R, but put developers in charge who weren't familiar with Codd's ideas. They came up with a language called SEQUEL, a name which was already used, so it was renamed SQL [May 1].

There has been heated debate over whether SQL is truly relational. For example, in Codd's model, a table is a set of tuples, while in SQL, tables and query results are row lists. In any case, SQL became very popular, and was widely copied. For example, Larry Ellison [Aug 17] used SQL ideas in his Oracle Database, which managed to be released before IBM's own relational system, SQL/DS.

Codd's PhD thesis was about self-replication in cellular automata, extending work by von Neumann [Dec 28] to show that eight states were sufficient for emulating universal computation and construction.

During WWII, Codd was a pilot with the Royal Air Force Coastal Command, which led to a lifelong love of flying.

Bob (Boe) Overton Evans

Born: Aug. 19, 1927;

Grand Island, Nebraska
Died: Sept. 2, 2004

Evans led the team that developed the IBM System/360 (S/360) [April 7], which represented an entirely new approach to mainframe computing. Previously, each machine was a unique system built to a specific customer's requirements, with no continuity from design to design. However, the S/360 was a family of compatible computers that shared hardware components, and could all run the same software.

It was Evans that persuaded IBM's chairman, Thomas J. Watson Jr. [Jan 14] to move in this direction, and IBM ended up invested more than $5 billion in engineering, factories, and equipment, opening five plants and hiring 60,000 employees. At the time (1964), IBM were effectively "betting the company" on this new strategy.

The new line was a massive success, and helped IBM remain a computing powerhouse through the 1960s.

Chester Gordon Bell

Born: Aug. 19, 1934;

Kirksville, Missouri
Died: May 17, 2024

After joining DEC [Aug 23] in the summer of 1960 (with badge number 80), he helped develop several of DEC's PDPs (e.g. the PDP-4, 5, 6 [March 22], and 11 [Jan 5]) and oversaw the creation of the VAX [Oct 25]. For example, he designed the I/O system of the PDP-1 [Oct 30] which featured the first UART (universal asynchronous

receiver transmitter) for external communication. These machines popularized the use of time-sharing minicomputers.

Bell and his wife Gwen were co-founders of The Computer History Museum [Sept 24], and he was the subject of the MyLifeBits life-logging project. It was inspired by Vannevar Bush's [March 11] vision of an automated store of the documents, images, and sounds an individual has experienced in his lifetime. He described the project in the book, "Total Recall", written with Jim Gemmell.

A quote: "The cheapest, fastest, and most reliable components are those that aren't there."

MIDI Released

Aug. 19, 1983

In 1981, Dave Smith and Chet Wood (with input from Ikutaro Kakehashi), devised a Universal Synthesizer Interface for connecting digital musical instruments together. Their proposal was a starting point for the MIDI (Musical Instrument Digital Interface) standard.

Dave Smith (2015). Photo by Pete Brown. CC BY 2.0.

MIDI was demoed in Jan. 1983 at the first North American Music Manufacturers show in Los Angeles. Smith linked a Prophet 600 analog synthesizer to a JP-6 keyboard via a small, 5-pin cable.

The "MIDI 1.0 Detailed Specification" was unveiled on this day by Kakehashi and Smith, who later received Grammy Awards in 2013 for their roles in its development.

However, the original 8-page document only defined the most basic things, like how to play notes and how to control the output volume. The response from music professionals at the time was mostly derision, calling MIDI too slow, too limited, and just a passing fad. However, more features were soon added which offered greater control over synthesizers, other recording gear, and even of stage lighting.

MIDI made the leap to computers when the Atari 520ST [Jan 10] became the first to come with built-in MIDI ports as standard.

First Blockchain

Aug. 19, 1990

Stuart Haber and W. Scott Stornetta sent the first version of their paper, "How to time-stamp a digital document" to the *Journal of Cryptology*, which published it in the Jan. 1991 issue.

Together with follow-up papers, they laid the foundation (cryptographic hashing of records, or blockchains) for Bitcoin [Jan 3]. In fact, when Satoshi Nakamoto first described Bitcoin in a Oct. 31, 2008 article, three of the eight papers cited were written by Haber and Stornetta.

In addition, Haber and Stornetta created their own timestamping service called Surety to put their scheme into action in 1995. This involves the publication of a unique hash value in *The New York Times* each week as a small ad in the "Notices & Lost and Found" section. The widespread circulation of that newspaper makes it essentially impossible to falsify the hash values.

GNN Launched

Aug. 19, 1993

The Global Network Navigator (GNN) was the first commercial web portal, and the first web site to offer clickable advertisements (the first was for Heller, Ehrman, White and McAuliffe, a now defunct law firm). The site included news, an Internet directory service (based on Ed Krol's "Whole Internet User's Guide and Catalog"), and a marketplace

GNN was the brainchild of Tim O'Reilly [June 6], CEO of the technical publishing company O'Reilly and Associates. In Feb. 1993, he authorized the formation of a crack four-person "skunkworks" team, led by Dale Dougherty, to begin designing the site.

By 1995, GNN had more than 400,000 regular viewers, and was nicely profitable since advertisers such as MasterCard typically paid rates of between $110 to $11,000 a week.

In June 1995, GNN was sold to AOL [Oct 2], where it lasted for a year and a half before AOL moved all of its subscribers over to the main AOL service. In Dec. 2000, an article in *The Wall Street Journal* argued that AOL had lost a wonderful opportunity to develop GNN into a competitive Web directory. Instead that market niche was filled by Yahoo! [March 2].

Soccernet

Aug. 19, 1995

Thirteen-year old Tom Hadfield's Soccernet web site went live on the first day of the UK premier league football season. It grew rapidly, helped by the Euro 1996 football competition, and the support of Yahoo! [March 2]. In 1999, Soccernet was sold to ESPN for $40 million.

In February 2002, Hadfield was named a 'Global Leader of Tomorrow' by the World Economic Forum in Davos.

Google's IPO

Aug. 19, 2004

Google's [Sept 7] IPO on the NASDAQ sold nearly 20 million shares at $85/share. To be precise, 19,605,052 shares were floated: Google released 14,142,135 (a reference to $\sqrt{2} \approx 1.4142135$), and other stockholders contributed 5,462,917.

The sale raised $1.67 billion, although Google had said beforehand that it hoped to raise $2,718,281,828, a reference to the Euler number, e [Jan 27].

Nevertheless, more than 900 employees became instant millionaires, including Bonnie Brown, the in-house Google masseuse, who started work there in 1999 when it only had 40 employees. She was only offered a part-time job, but it included Google stock options.

In 2005 Google said it would sell a further 14,159,265 shares, which numerically corresponds to the first eight digits after the decimal point in π [March 14].

On Oct. 22, 2015, Alphabet, Google's new parent company, announced the stock buyback of $5,099,019,513.59. Incidentally, the square root of 26 (the number of letters in the alphabet) is 5.09901951359

If you had bought one share of Google in 2004 for $85, it had become two shares worth a total of around $2600 in late 2019, taking into account Google's stock split on March 27, 2014.

Text Messaging Saves Lives

Aug. 19, 2010

Two British climbers, Finn McCann and Tom Greenwood were caught in a storm 3,500 meters up the Aiguille Noire de Peuterey peak on the French/Italian border, but they called for help by sending a text message to a friend in the UK.

Two attempts to rescue the climbers were unsuccessful due to the bad weather, but they were eventually picked up by an Italian helicopter.

"We were worried about hypothermia and with two bars of battery between us we were really panicking," said McCann.

Galaxy Note 7

Aug. 19, 2016

The Samsung Galaxy Note 7 was released on this day, as a successor to the Galaxy Note 5. "6" was skipped so it wouldn't be seen as inferior to the Samsung's flagship Galaxy S7.

On Sept. 2, 2016, following several reports of phones catching fire, the Note 7 was recalled in the US, and Samsung launched exchange programs in other countries. Then some of the replacement units started catching fire in early October. As a result, Samsung discontinued the Note 7 worldwide, and recalled all of them. Credit Suisse analysts believed that this ultimately cost the company nearly $17 billion.

Later it was discovered that the Galaxy's battery contained a design flaw that made electrodes on its top-right susceptible to bending. This reduced the separation between the positive and negative tabs, increasing the chance of short circuits.

Problems with lithium-ion batteries are far from new; see [June 12; Aug 28]