April 19th

Albert Wallace Hull

Born: April 19, 1880;

Southington, Connecticut
Died: Jan. 22, 1966

Hull is best known for his invention of the magnetron (a high-powered vacuum tube that generates microwaves), but he created many other types of electron tubes, more kinds than any other person. They all have magnificent Greek-based names, including the Pliotron, Dynatron, Pliodynatron, Thyratron, and (of course) the Magnetron. As an undergraduate at Yale, Hull majored in Greek, so these names are all functionally correct adaptations of Greek roots.

Clifford Edward Berry

Born: April 19, 1918;

Gladbrook, Iowa
Died: Oct. 30, 1963

The world's first electronic digital computing device [Jan 15], the Atanasoff–Berry Computer (ABC), was developed (as the name strongly suggests) by John Atanasoff [Oct 4] and Berry.

In March 1939, Atanasoff applied to Iowa State College for a grant to hire a graduate assistant ($450) and purchase equipment ($200) to start building the ABC which he had been designing since [Sept 00] 1938. Along with the money came a suggestion by Harold Anderson, a friend of Atanasoff's and the head of the Engineering Department, that Berry would be a good choice for the position.

In 1984, Atanasoff recalled: "I feel that the choice of Clifford E. Berry was one of the best things that could have happened to the project. After he had worked for a short time, I knew that he had the requisite mechanical and electronic skills-and that he had vision and inventive skills as well."

Clifford Berry. (c) Iowa State University.

By Oct. (or Dec.) 1939 the pair had completed a simple prototype which could add and subtract, and could utilize drum memory during its calculations. As a result, Atanasoff received a larger grant ($5000) from the Statistics Lab to build a full-sized model. The ABC was probably completed at the end of 1941.

Berry was awarded a Master's degree in 1941 with a thesis entitled, "Design of an Electrical Data Recording and Reading Mechanism," for one of his contributions to the ABC. He also wrote an manual for the computer, which became an important historical record later.

After WWII, Berry joined Consolidated Engineering Corporation (CEC), and developed the 30-103 Analog Computer, the first commercial machine that could solve simultaneous linear equations. Its success persuaded CEC to spin off the division in 1954 as ElectroData, but after two years it was acquired [Jan 12] by Burroughs.

As a boy, Berry learned about electronics from his father who ran an electrical appliance and repair store. He built his first ham radio when he was 11-years old.

Andrei Petrovich Ershov

Born: April 19, 1931;

Moscow USSR
Died: Dec. 8, 1988

Donald Knuth [Jan 10] believes that Ershov independently co-discovered (at the same time as Gene Amdahl [Nov 16]) the idea of hashing with linear probing, and also created one of the first algorithms for compiling arithmetic expressions. Ershov's Russian textbook on programming the BESM-1 [Nov 2] also influenced Knuth's use of flow charts.

Ershov's other achievements included ALPHA, an optimizing compiler for an ALGOL-like language; AIST-0 the first Soviet time-sharing system; MRAMOR, a desktop publishing system for Pravda newspaper; and the formation of the "Computer Bank of the Russian Language" project in the 1980s, comparable to the British National Corpus.

Erskov became friends with John McCarthy [Sept 4] in 1958, after they met at the Teddington Conference on the "Mechanization of Thought Processes" [Nov 24], which led to McCarthy visiting Ershov in Novosibirsk in 1965 – the first Westerner to be allowed to visit its extensive research institutes.

Unfortunately, the Soviet government wouldn't allow Ershov to accept an invitation to spend a semester at Stanford. Nevertheless, on another occasion, Knuth introduced Ershov to the virtues of American square-dancing, including the Virginia Reel.

Frederick Phillips Brooks, Jr.

Born: April 19, 1931;

Durham, North Carolina
Died: Nov. 17, 2022

When only 30-years old, Brooks was placed in charge of managing the development of IBM's System/360 [April 7]

family and the OS/360 operating system [March 31], which cost IBM over five billion dollars, and was widely considered to be a make-or-break gamble for the company. Along the way, Brooks coined the phrase "computer architecture".

Fred Brooks (2007). Photo by SD&M. CC BY-SA 3.0.

He later wrote about the development process in his seminal book "The Mythical Man-Month" (1975). Despite being about a bygone era, it describes many of the factors that still bog down software development and its management. One of the book's now-famous adages is: "Adding manpower to a late software project makes it later." This is now known as Brooks' law.

Brooks had joined IBM in 1956, where he first worked on the architecture of the IBM 7030 STRETCH [April 26], and the IBM 7950 Harvest [Feb 27].

When asked what he considered his greatest technological achievement, Brooks responded: "The most important single decision I ever made was to change the IBM 360 series from a 6-bit byte to an 8-bit byte, thereby enabling the use of lowercase letters. That change propagated everywhere."

Other quotes: "The programmer, like the poet, works only slightly removed from pure thought-stuff. He builds his castles in the air, from air, creating by exertion of the imagination."

"Good judgment comes from experience, and experience comes from bad judgment."

Brooks' Law of Prototypes: "Plan to throw one away, you will anyhow."

Wild FORTRAN

April 19 (or 20), 1957

Prev: [Feb 26]

Herbert Bright (1919 - 1986), manager of the data processing center at the Westinghouse Bettis Atomic Power Lab near Pittsburgh, received a stack of 2,000 punch cards in the mail from the FORTRAN development team at IBM.

Bright and Lew Ondis guessed that the unlabeled cards were a compiler for FORTRAN, so Ondis loaded them into an IBM 704 [May 7], and then used it to compile a small FORTRAN program written by a colleague, Jim Callaghan; it calculated the Gamma and Tau statistics for data involving two variables.

The compiler reported that the code was missing a comma after a goto in line 25. That was quickly fixed, and the next time the compiled program produced 28 pages of correct output. The simplicity of the coding process was viewed as amazing: Callaghan had written the FORTRAN program in an afternoon, while the equivalent code in assembly language would have taken two weeks to write and another two weeks to debug it (as estimated by Bright).

Bright reported on the success at the SHARE [Aug 22] meeting on the following Monday (the 22nd)

This marked the first time that FORTRAN has been used outside IBM, "in the wild," and became an important real-life example of the utility of high-level programming languages (and their tools).

Moore's Law Published

April 19, 1965

Gordon Moore [Jan 3], then head of research and development at Fairchild Semiconductor [Oct 1], published the article "Cramming More Components Onto Integrated Circuits" in "Electronics" magazine.

He observed that the number of components (transistors, resistors, diodes or capacitors) in an integrated circuit had doubled approximately every year, and speculated that it would continue to do so for at least the next ten years.

At the time, the optimal number of components in a circuit was around 50, but Moore projected that by 1975, that number would be closer to 65,000, which turned out to be correct. However, in 1975, Moore revised the forecast rate down to approximately a doubling every two years (starting from 1980). It was also in the mid 1970's when Carver Mead [May 1] started popularizing the prediction as "Moore's Law" (although it really isn't a "Law").

One popular loose interpretation disregards the emphasis on how many components fit onto a chip; instead it states that chip performance will double every 18 months. This variant seems to have originated with Intel executive David House. Also, see Koomey's Law about energy efficiency [March 29].

Most researchers believe that Moore's Law is getting close to fundamental physical limits as processor features approach the size of atoms. However, novel chip packaging and new materials could give the law a few more years of predictive power

Two (of many) amusing variations of Moore's Law:

"The number of people predicting the death of Moore's Law doubles every two years." – Peter Lee.

"Software efficiency halves every 18 months, compensating for Moore's Law." – May's Law.

In April 2005, Intel paid $10,000 for a copy of the issue of Electronics where Moore's article appeared, suggesting that there's also a "Moore's Law" for that particular publication (which cost 75 cents originally).