April

Poe, the Turk, and Babbage

April 1836

In 1769, Hungarian author and inventor Wolfgang von Kempelen unveiled his chess-playing automaton, the Turk. Although the machine was seemingly filled with an elaborate arrangement of gears, the cabinet also concealed a man controlling the Turk's movements.

One of the most insightful commentators about the device was by Edgar Allan Poe in the article, “Maelzel’s Chess Player” in April 1836. He argued that if the automaton was real then it must be able to use the result of an operation to make a decision about the next (i.e. “conditional branching”). If the Turk had this feature then it would be far superior to Babbage's Difference Engine [June 14].

Conditional branching was one of the key element’s of Babbage’s Analytical Engine [Dec 23] which he'd started working on two years before.

Oldest Working Computer

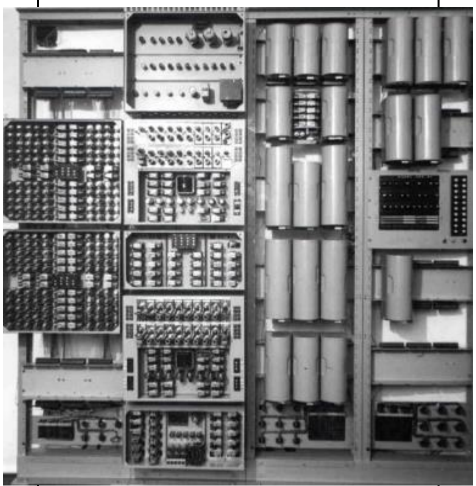
April 1951

Construction started on the Harwell Dekatron Computer in 1949 at the UK Atomic Energy Research Establishment (AERE) soon after the designers, Ted Cooke-Yarborough, Dick Barnes, and Gurney Thomas, had visited Maurice Wilkes’ [June 26] EDSAC [May 6] in Cambridge for inspiration. The Dekatron became operational during this month.

The computer's name referred to its use of 828 dekatrons (gas-filled flashing decimal counting tubes) for storage, but it also utilized 480 relays and 130 vacuum tubes.

It was never a record-breaker for speed, with a multiplication taking between 5 and 10 seconds. Cooke-Yarborough justified its slow operation as a tradeoff for reliability – from May 1952 until Feb. 1953, it averaged 80 hours of running time per week.

Cooke-Yarborough went on to design its successor, the Harwell CADET [Feb 00], perhaps the first fully transistorized computer.



The Harwell Dekatron. Photo by MichaelWilson78.

The Dekatron was decommissioned in 1957, and the AERE ran a competition to find it a worthy new home. The machine went to the Wolverhampton and Staffordshire Technical College (later Wolverhampton University) where it was used for teaching until 1973. The college also renamed it the WITCH (the Wolverhampton Instrument for Teaching Computing from Harwell).

In 1973, the college donated the WITCH to Birmingham's Museum of Science and Industry, where it was put on display until the museum closed in 1997.

In 2009, Kevin Murrell from the National Museum of Computing at Bletchley Park happened to catch a glimpse of one of its control panel in a photograph, and decided to rescue it from storage.

After restoration, the museum began running Dekatron demos in 2012, and the Guinness Book of World Records recognized the machine as the world’s oldest working digital computer in 2013.

For the oldest working analog computer, see [Jan 00].

Timothy Turtle

April 1953

“Timothy Turtle” was a robot created by Jack H Kubanoff which responded to flashing light via two photocells in its head. It could ‘search’ for food, ‘play’, and also return to its ‘nest’ to recharge. Its shell was shaped wire covered in paper maché.

Timothy's schematics were published in the April 1953 issue of the *Radio & Television News* (online at

http://www.davidbuckley.net/DB/HistoryMakers/TimTurtle/TimTurtleApr53.htm), probably making it the first published robot construction project. Kubanoff article supplied construction tips, diagrams and pictures for building the tricky parts such as the turtle’s head

However, Timothy wasn’t the first robot of this type; its use of photocells was quite similar to Edmund C. Berkeley’s Squee [Aug 25]. Squee was described across two issue of *Radio Electronics* in Dec. 1951 and Feb. 1952, but not in the great detail supplied by Kubanoff. Instead, more comprehensive plans for Squee could be purchased seperately.

The robot’s name was probably inspired by the 1946 children’s book, “Timothy Turtle” by Al Graham.

DYSEAC is Mobile

April 1954

The DYSEAC was a vacuum tube computer built by the National Bureau of Standards (NBS) for the US Army Signal Corps. It was based, as the name suggests, on their earlier SEAC machine [June 20]. It was designed by Alan Leiner in 1951, and became operational this month.

DYSEAC's claim to fame was that it was housed in a truck, thereby making it the first 'mobile' computer. The vehicle's dimensions were approximately 39 x 7 x 9 feet (i.e. RV sized), and weighed 12 tons.

The DYSEAC actually required two trucks: the computer, control console, input-output, and refrigeration units were in van no. 1, while vehicle no. 2 contained the DC power supply, more refrigeration capacity, and 1,700 cubic feet of space for cabling, and spare parts. This second van only weighed 8 tons.

Nevertheless, the DYSEAC proved useful, and another 'mobile' machine, the MOBIDIC [Dec 1], was completed in 1959.

For the world's first 'portable' computer, in the sense of being 'liftable' by a human being (or two), see the RECOMP II [Jan 00].

BESK Calculates

April 1954

The BESK (Binär Elektronisk SekvensKalkylator, or "Binary Electronic Sequence Calculator") was Sweden's first electronic computer, with around 2,400 vacuum tubes and 400 germanium diodes.

It was developed by the Matematikmaskinnämnden (the Swedish Board for Computing Machinery), modeled on the IAS machine [June 10] which the design team had studied during a visit to Princeton. The chief engineer was Eric Stemme, and his team were known as the "BESK Boys".

The BESK control panel. Photo by Liftarn. CC BY-SA 3.0.

For a short time, the BESK was the fastest computer in the world, able to perform an addition in 56 µs and a multiplication in 350 µs.

It performed its first calculations this month, and remained in use until 1966.

"BESK" is quite similar to "bäsk", the name of a traditional alcoholic drink local to the Lund area where the Matematikmaskinnämnden was located.

Before BESK, the Matematikmaskinnämnden had funded the construction of the BARK (Binär Aritmetisk Relä-Kalkylator), Sweden's first computer, which employed around 8,000 relays and 80 km of cable.

The Teletype Model 33

April 1963

Teletype Corporation's Model 33 became one of the most popular terminals of the 1960's and 1970s, primarily as an IO device for minicomputers.

One reason was its low cost (around $700) compared to other teleprinters and terminals of the time. Another was its use of the newly introduced ASCII code [June 17]. In addition, pushing the keys was a good form of exercise since each one had to travel a half inch before making electrical contact, and a key's resistance to being pressed was considerable.

There were three versions, the most common being the Model 33 ASR, (Automatic Send and Receive), which had a built-in tape reader and tape punch. The "KSR" (Keyboard Send and Receive) lacked a tape reader and punch, while the RO (Receive Only) didn't even have a keyboard.

Over a half-million Model 32s and 33s had been made by 1975. The 500,000 th was gold-plated and placed on display. Serial Number 600,000, manufactured in 1976, the US Bicentennial year, was painted red-white-and-blue and toured the country.

From 1930, the Teletype Corporation was a part of AT&T's Western Electric manufacturing arm, and so linked to Bell Labs [Jan 1]. This is reflected in how UNIX [Oct 15] labels serial ports as /dev/tty...; tty is short for "Teletype".

Other influential terminals from the minicomputer days were the ADM-3A [May 19], and the DEC VT100 [Aug 00].

ALPAC Formed

April 1964

The ALPAC (Automatic Language Processing Advisory Committee) was made up of seven scientists led by John R. Pierce [March 27]. It was set up by the US government to evaluate the progress of research in computational linguistics and machine translation (MT). As part of their investigation, the group considered the Georgetown-IBM MT experiment from [Jan 7] 1954, and examined Gilbert King's [Jan 13] Mark I and II translators.

The report, issued in 1966, was intensely skeptical of MT, and instead emphasized the need for basic research into computational linguistics. This led to a drastic reduction in funding for MT that lasted for nearly two decades.

One infamous (and probably apocryphal) MT example was the phrase, “the spirit is willing but the flesh is weak.” Translated into Russia and back to English, it became “the vodka is good but the meat is rotten.” Similarly, “out of sight, out of mind” became “blind idiot”.

GOB
April 1964

The Lawrence Livermore National Lab (LLNL) (actually called the Lawrence Radiation Lab at the time) received the first four CDC 6600s [Sept 00].

One of them became the hardware for a new time-sharing OS developed by Bob Abbott, Tad Kishi, and Hardy, known as GOB. This was at a time when time-sharing systems, such as MIT's CTSS [May 3] and Multics [Nov 30], were still research efforts.

The GOB acronym apparently stood for “Generous Omnipotent Benefactor”, with the additional feature of being the Russian word for God (i.e. бог) spelled backwards. By the summer of 1965, the system supported 48 teletypes.

Much later Abbott was one of the technical advisor for the movie “Sneakers” [Sept 9]. The NSA Agent played by James Earl Jones was given the name “Bernard Abbott” in recognition of his contribution.

The Uncanny Valley
April 1970

Masahiro Mori, a robotics professor at the Tokyo Institute of Technology, published the article, “Bukimi No Tani” (The Valley of Eeriness) in the Japanese magazine *Energy*.

It suggested that as robots became more human-like, a point would be reached where subtle imperfections in their appearance would make them look unsettling, which implied that robots should never be made to look overly lifelike.

Mori later remarked: “Since I was a child, I have never liked looking at wax figures. They looked somewhat creepy to me.”

Separately from Mori, the first use of the phrase “the uncanny valley” came in a popular robotics book by Jasia Reichardt called “Robots: Fact, Fiction, and Prediction”, published in 1978.

By the time an English translation of Mori’s article was due to appear in 2005, the phrase “uncanny valley” had become so familiar to English speakers that the article’s title was changed to “The Uncanny Valley”.

Intel 8008
April 1972

Intel released the 8008, its first 8-bit microprocessor. It could execute between 50,000 and 100,000 instructions per second, and came with a 14-bit address bus that could address a whopping 16 KB of memory.

Although the 8008's name echoed the 4004's [Nov 15], it wasn't an 8-bit version of the 4-bit 4004; the similar names were purely a marketing invention. Their most important technological link was their use of the same silicon-gate design methodology invented by Federico Faggin [Dec 1].

The 8008’s story began in 1969 when Computer Terminal Corporation (CTC) decided to build its new Datapoint 2200 terminal [Nov 27] using a single chip CPU rather than out of several TTL chips.

Phil Ray and Austin O. “Gus” Roche, the CTC founders, asked Victor Poor and Harry Pyle to design the chip, and Roche persuaded Intel to produce it.

Just to be on the safe side, CTC also got Texas Instruments (TI) to build a version. Intel’s chip was called the 1201, and TI called theirs the TMX 1795 [Aug 31].

The 1201 ended up being somewhat different from the CTC specification. For instance, Ted Hoff [Oct 28] and Stan Mazor [Oct 22] preferred to use RAM-based register memory, and added an interrupt facility.

Intel's Hal Feeney handled the detailed logic design and physical layout of the 1201 under Faggin’s supervision, and his initials, HF, were etched on the top right of every chip.

For a variety of reasons, Datapoint eventually rejected both Intel and TI's microprocessors, and instead built its own CPU with newer, faster TTL chips. A much worse decision by CTC, even though Roche voted against it, was to abandon both chips' intellectual property to Intel and TI.

One reason for CTC’s rejection of the Intel chip was its late delivery. *Electronic Design* magazine carried the first public description of the chip on Oct. 25, 1970, along with an estimate that it would be on the shelves by the first quarter of 1971; the actual release occurred a year later.

TI also tried to market its chip, the TMC 1795 (the “X” was dropped since it meant “eXperimental”), by describing it as a “central processor on a chip”. Sales were poor, and they eventually abandoned it, focusing on profitable calculator chips instead.

Meanwhile, Intel's 8008 (the renamed 1201) was a roaring success. So although TI was probably first with their 8-bit chip, it was Intel who created the microprocessor industry.

KIM-1 Released
April 1976

The KIM-1 (Keyboard Input Monitor) was a small 6502-based [Sept 16] single-board fully-assembled computer developed by Chuck Peddle [Nov 25], and produced by MOS Technology.

It came with 1K of RAM, six 7-segment LEDs (similar to those on a pocket calculator), a 24-key calculator-type keypad, an audio cassette interface, and 15 programmable I/O pins. There were two connectors on the edge of the board that could drive a Teletype Model 33 ASR [five entries back]. All this for a low price of $245.

BYTE magazine's review said, "it will prove attractive to readers who are not inclined to fondle hardware extensively."

A working KIM-1 (2005). Photo by en:Wtshymanski.

The KIM came with good documentation, and a "Kim-1 User Notes" newsletter was edited by Eric Rehnke. Several books were published on KIM assembly programming, including the popular "The First Book of KIM" by Jim Butterfield, Stan Ockers, and Eric Rehnke.

When Commodore acquired MOS Technology in 1976, Peddle redesigned the KIM's board to become the internals of the Commodore PET [April 15].

The GRiD Compass 1101

April 1982

The GRiD Compass was the first laptop in a clamshell case, and also had a unique 320×240-pixel 6-inch electroluminescent display (ELD).

It was fast, rugged, sleek, lightweight (5 kg), and very expensive ($8,000 – $10,000). By comparison, the Osborne 1 [April 3] cost around $1,800 at the time. However, its intended audience were the military and high-flying executives, so price was somewhat irrelevant. In an article in this month's *Business Week* magazine, the Compass was touted as "a Porsche for top executives."

There was a GRiD Compass on every space shuttle mission from 1983 to 1997, although NASA replaced its modem with a board that let it communicate with on-board instruments. After the Jan. 1986 Challenger disaster, the GRiDs that had been on the spacecraft were recovered and still worked.

The US Special Forces also purchased the machine for use in combat, and it was rumored that the President's "nuclear football" included a GRiD Compass at one time.

The Compass' main weakness was that it couldn't run on batteries and, strangely enough, didn't have a carry handle. These drawbacks were fixed in subsequent versions.

The machine was designed by Bill Moggridge, and in later years, the company earned large sums from its Compass-related patents (e.g. the clamshell design) as its innovations became commonplace.

The GRiD founders, John Ellenby (formerly of Xerox) and Glenn Edens, later said that the original concept was inspired by Alan Kay's [May 17] Dynabook. The name "GRiD" stood for "Graphical Retrieval Information Display".

For more space shuttle stories, see [Jan 22], [Feb 24], [March 11], [Apr 10], [Aug 9], [Oct 4]