



VIE

In issue 2, I asked a question about the switches on the Hollerith tabulator – basically what are they?

To help me answer the question, Randall Neff told me about a set of notebooks that he had prepared to help docents learn about the exhibits in Visual Storage.

I read the Hollerith book and found it really helpful in answering my question. Recently I've read other notebooks – one on Illiac, and part of one on Eniac – again very helpful. More to go.

If you haven't seen these books, I recommend them. They are in the large cabinet in the Babbage closet/room.

And thanks to Randall for his work in putting them together.

Jim Strickland jlstrick@aol.com

OPEN QUESTIONS

Q: On the Hollerith machine, just to the left of and behind the “waffle iron” card reader are six switches. Do we know what they do? And next to the switches are what seem to be two terminals. Do we know what they are for?

A: They allowed the operator to modify the operation of the tabulator on a card by card basis. See article on page 4.

Unfortunate Predictions

"There is no reason anyone would want a computer in their home."

Ken Olson, president, chairman and founder of Digital Equipment Corp. (DEC), maker of big business mainframe computers, arguing against the PC in 1977.

On Computer History

Paul Baran, networking technologist and one of the inventors of packet-switching, in an interview in 1990, said:

The process of technological development is like building a cathedral. Over the course of several hundred years, new people come along and each lays down a block on top of the old foundations, each saying, 'I built a cathedral.' Next month another block is placed atop the previous one. Then comes along an historian who asks, 'Well, who built the cathedral?' Peter added some stones here, and Paul added a few more. If you are not careful you can con yourself into believing that you did the most important part. But the reality is that each contribution has to follow onto previous work. Everything is tied to everything else."

Submitted by Bud Warashima

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STORIES

Do you have a favorite story? Did you just learn something new that you want to share. Even if you think, "Everybody knows that ...", please let us hear from you.

John Mauchly

- On April 28, I was "docenting" in the first gallery and I approached a pair of visitors to tell them that I was giving a tour at 12:00. Then I said, "Are you here to see anything in particular?"

One visitor answered, "Yes, the ENIAC."

I said, "Ah! It's right there," and I pointed it out across the gallery.

"Why did you want to see that in particular?" I said.

"My father invented it."

Indeed it was John W. Mauchly Jr.

In talking further, I mentioned that during the tour I would tell the 1952 election story. John said that was a good story but did I know that during all the programming for the election his father could not go into Univac headquarters and had to work from home because he was blacklisted! And because the Univac division had government contracts, Mauchly could not go into the physical office.

Doing a little research, I found Mauchly had briefly belonged to a scientific organization that, unknown to him, had a Communist affiliation. During World War II, the Soviet Union was an ally of the United States and scientists were encouraged to develop ties with Soviet scientists. Many scientific organizations did so with the blessing and encouragement of the government.

But with the advent of the cold war, not all of the reactions to the stresses of the time were logical. One ugly manifestation of McCarthyism was the practice of blacklisting people suspected of being Communist sympathizers. The inventors of the ENIAC, who developed it with Army funding, and with the highest level of security clearances, found that they were under suspicion of being communist sympathizers.

John Mauchly Jr. was the son of John Mauchly and Kay McNulty Mauchly. Kay was one of the ENIAC programmers. (After John's death, she later remarried and was known as Kay Antonelli.) She often lectured with her friend and former fellow ENIAC programmer Jean Bartik who recently passed away.

John Sr. had two sons with his first wife, Mary who died tragically in 1946. In 1948, he married Kay, thirteen years younger than he, and they had five children, John Jr. and four sisters. John Mauchly died in 1980 at the age of 72, Kay died in 2006 at 85.

Jim Strickland

- Did you know that John Mauchly was Presper Eckert's student? No, that's not a misprint.

Mauchly had a PhD. In physics, but in 1941, he wanted to learn about the burgeoning field of electronics. So he enrolled in a class at the Moore School of Engineering (where he was soon to become a professor) and found himself, the oldest person in the class, being taught by Pres Eckert, who was twelve years his junior.

Jim Strickland

Paul Allen on Steve Russell

When Paul Allen spoke at the CHM Revolutionaries series on Monday April 25, he was asked about how he and Bill Gates got started in their love affair with computers. One person he credited was our own Steve Russell.

Allen said one that one part of learning programming was to see how others solved a problem. He recalled looking in trash cans to find old program listings from Star Wars and saying things like, "Oh, look how he made the graphics for that explosion. Isn't that cool?"

Then I began reading the book. Paul credits Steve frequently, citing his willingness to help the young Allen and Gates learn programming.

Three statisticians go out hunting together. After a while they spot a solitary rabbit.

The first statistician takes aim and overshoots.

The second aims and undershoots.

The third shouts out "We got him!"

IN MEMORIAM MAX MATTHEWS

Max Mathews, often called the father of computer music, died April 21 in San Francisco at 84.

Mathews, who taught at Stanford in his later years, wrote the first program to make it possible for a computer to synthesize sound and play it back. He also developed several generations of computer music software and electronic instruments and devices.

He was an engineer at Bell Labs, in 1957 when he wrote the first version of Music, a program that allowed an IBM 704 computer to play a 17-second composition. Because computers at the time were so slow, it would have taken an hour to synthesize the piece, so it had to be transferred to tape and then speeded up to the proper tempo. But the experiment proved that sound could be digitized, stored and retrieved.

The implications of Mathews' early research reached popular audiences through the 1968 film "2001: A Space Odyssey," in which the HAL 9000 computer sings "Daisy Bell" ("A Bicycle Built for Two.")

He gave us a whole new way to imagine and create music said John Chowning, a composer and the founder of the Center for Computer research in Music and Acoustics at Stanford University. "He has had an enormous effect on how music has evolved in the last 50 years.



Dr. Mathews attended the reopening of the Computer History Museum in January. Shown sitting next to Steve Wozniak in a Q&A session

FACTS AND FACTOIDS

Factoid (Oxford English Dictionary) "something which becomes accepted as fact, although it may not be true." If you submit an item, please differentiate the facts from the factoids. And if you can verify something, thus changing it from a factoid to a fact, please let us know.

Fact: Shockley, Bardeen, and Brattain

As we know, in 1947, John Bardeen and Walter Brattain, working under Physics Group leader William Shockley at AT&T's Bell Labs, made the discoveries that led to their Nobel prize in 1956 for the transistor. And that Shockley "came west" to Beckman Instruments, where he was appointed as the Director of Beckman's newly founded Shockley Semiconductor Laboratory division. Some say that was the start of Silicon Valley.

But what happened to John Bardeen and Walter Brattain.

Well, Bardeen, the theoretician, left Bell labs in 1951 and devoted himself to the study of superconductors at the University of Illinois. That work led to his second Nobel prize in Physics, awarded in 1972 (with Leon Cooper and Robert Schrieffer) for the "BCS" (their initials) theory of superconductivity. Interestingly, Bardeen was the first person to win two Nobel prizes in the same field.

And Brattain, the tinkerer and builder? He asked to be transferred to a different lab at AT&T, away from Shockley, where he stayed until retiring to be a professor at his alma mater, Whitman College in Walla Walla, Washington.

“Sense switches” on the Hollerith Tabulator

Q: On the Hollerith machine, just to the left of and behind the “waffle iron” card reader are six switches. Do we know what they do? And next to the switches are what seem to be two terminals. Do we know what they are for?

A: Randall Neff pointed out that we have a notebook on the Hollerith machine and its early use that Randall put together. The notebook is excellent and I found a partial answer to the question and information that let's me infer some more. I welcome any corrections to my inferences.

To explain, let me start back a little.

- Census cards were blank except for a serial number which tied a card to an enumeration form.
- In the Enumeration Districts, a sequence of cards were assigned to a punch operator.
- The cards, one per person, were punched in two steps. Columns 5-24 were punched on the pantograph punch. Columns 1-4 contained the enumeration district and were punched in a separate operation, 4 to 6 at a time, by a gang punch.
- A stack of cards could be visually checked for common data by looking through the holes or “needling” them with a knitting needle. (This kind of checking remained a part of punched card operations “forever.”)
- The lower right corner cut helped ensure that cards were not mistakenly stacked backwards or upside down.
- After punching, the cards were sent to Washington to be tabulated.
- During tabulation there were a number of verifications, e.g. either male or female had to be

punched.

- If a card failed a verification, the tabulator bell would not ring and the operator had to remove the card and fix it or have it fixed.
- But perhaps on examination, the card was really OK. For example, the recording of some very infrequent item or classification and the operator determined that the card was valid, she could throw one of the switches to override the verification and tabulate the card. That use of a switch is documented in the notebook.
- I infer that the switches could be wired so as to allow the operator to make minor modifications in the tabulations. Perhaps one switch might turn the sorter off. Or another switch might prevent tabulation and thus to “sort only.”
- Note that later IBM tabulators like the 403 and 407 had external “set-up change switches” which allowed a single control panel to be wired so as to do more than one function. A common use was to wire the control panel to do a detail list of all cards or to list just subtotals and grand totals depending on the position of a set-up change switch.
- And the concept continued on to the IBM 1401 which had six “sense switches” (1 special purpose and five that could be tested under program control) to modify the execution of the program based on how the operator set the sense switches.
- Further, the 1401 Compatibility feature of the /360 Model 30 had to support sense switches in spite of the fact that the /360 did not have such switches.. My memory is that one used a control card to “set the sense switches,” though there may have been alternative methods.

Jim Strickland

19th Century Meets 21st Century

I came in to do my regular shift and found Randall and Julie Neff working on the Babbage Engine.

As you know it locked up. Most interesting to me was the fact that they had a laptop with attached camera and were getting advice via Skype from Tim Robinson who was in London.

As of May 1, the Babbage engine is currently jammed in the printer section. Randall and Julie are waiting for Tim to return from London, and will probably be working on it next week. Randall says

that they will probably remove the large print wheels, clean them, the horizontal rack and the vertical rack. Then realign everything in the printer section.

If Babbage had Randall, Julie and Jim working with machinist Joseph Clement, perhaps the Difference Engine would have been built in 1840 or 50. But then probably not, neither Babbage nor Clement was easy to work with.

Thanks to Randall, Julie and Tim for their wonderful assistance.

Jim Strickland

MAKER FAIRE *From Eric Klein*

This Year's Maker Faire is on May 21st and 22nd (Saturday/Sunday) and I am again opening up my booth to volunteers from the CHM to participate. Anyone is welcome - Docents, Greeters, Staff, etc. I just need to compile a list of names to submit to the Maker Faire event coordinators so they can be on the list.

It will be held at the San Mateo County Fairgrounds (very close to Hwy 101 and 92). Hours are Saturday 10:00 AM – 8:00 PM; Sunday 10:00 AM – 6:00 PM.

I'm not sure how many freebies they'll give me this year but they were extremely generous last year (both with tickets and space) and I'm hoping they stay that way.

For 2011 my goal is to make some noise and produce output that people can take with them.

I have several systems with various types of printers lined up to let people see how output was created before laser and ink-jet printers dominated.

Assuming everything continues to work over the next few weeks:

- I have an Epson MX-80 that will be attached to an Apple.
- I have a converted typewriter that will connect to an IBM PC Portable.
- I have a daisy-wheel printer hooked up to a Kaypro luggable.
- I have an Atari thermal printer that will hopefully work with my Atari 800.
- And - the big beast - I have an ASR33 Teletype that will, with luck, run off of my Altair system.

Plans may change, but most of this stuff or things like it will make the show.

And, if possible, I'll have some CHM literature, posters, etc. to help get the word out about the museum itself.

Please spread the word far and wide...

Erik Klein www.vintage-computer.com

Coming Events

Date	Day	Time	Event
May 11	Wed.	12 Noon	CHM Soundbytes - Computer Conservation in the United Kingdom: The EDSAC Replica Project
May 11	Wed.	07:00 PM	CHM Presents Revolutionaries Sir Maurice Wilkes: The Man and His Machine
May 21	Sat, Sun	10:00 – 8:00 10:00 – 6:00	Makers Faire – see details, this page
Jun 29	Wed.	12 Noon	CHM Soundbytes - The History of Magnetic Striped Media Technology – A Lecture by Jerome Svigals

Please contribute to the Computer History Museum
Volunteer Information Exchange.

Share your stories, your interesting facts (and factoids) and your knowledge. Send
them to Jim Strickland jlstrick@aol.com