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HP-9199A

HP-9199A

Threaded Mode



**John Garza (3665)** ●  
Senior Member

Posts: 549  
Threads: 42  
Joined: Aug 2016

10-12-2023, 01:34 AM

#1

Anyone know anything about this one?

-J

### Attached Files

#### Thumbnail(s)



**rprosperi** ●  
Super Moderator

Posts: 7,233  
Threads: 259  
Joined: Dec 2013

10-12-2023, 01:19 PM

#2

**John Garza (3665) Wrote:**

(10-12-2023, 01:34 AM)

Anyone know anything about this one?

-J

I do, I know it's a page out of a notebook I was too slow to buy on eBay.... <hrmpf>

If any reader here was able to purchase that notebook, PLEASE consider sharing a scan of the contents with the community. It doesn't diminish the value of the original but it does share the history among community members that appreciate it.

**--Bob Prosperi**

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**John Garza (3665)**  
Senior Member

Posts: 549  
Threads: 42  
Joined: Aug 2016

10-12-2023, 02:23 PM

#3

Yeah, I bought it. It's on the way.

I'll definitely share the scans. That was always my intent.  
Just wanted to ask about this one as I've never heard of it.

Looks to be an algebraic derivative of the 9100.

-J

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**AndiGer**  
Senior Member

Posts: 639  
Threads: 27  
Joined: Oct 2015

10-12-2023, 04:55 PM

#4

My first thought: Maybe McGhee had to leave due to the key bottom left?

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**rprosperi**  
Super Moderator

Posts: 7,233  
Threads: 259  
Joined: Dec 2013

10-12-2023, 07:19 PM

#5

**John Garza (3665) Wrote:** (10-12-2023, 02:23 PM)

Yeah, I bought it. It's on the way.

I'll definitely share the scans. That was always my intent.  
Just wanted to ask about this one as I've never heard of it.

You da man!!

I am sooo glad it ended up in the hands of a like-minded member of the community. I'm truly looking forward to seeing the pages of this notebook.

**John Garza (3665) Wrote:** (10-12-2023, 02:23 PM)

Looks to be an algebraic derivative of the 9100.

Seems about right, dates make sense, etc.

But this is the first calc. layout I've seen with the Equals button on the bottom, far Left. This was also a time of widespread hallucinogenic drug experimentation in Silicon Valley, perhaps this explains it.

**--Bob Prosperi**

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**John Garza (3665)** ●  
Senior Member

Posts: 549  
Threads: 42  
Joined: Aug 2016

10-13-2023, 07:48 AM (This post was last modified: 10-13-2023, 07:51 AM by John Garza (3665).)

#6

When I first saw it up for sale, I knew I had to buy it fast.

My great fear was that it would be snapped up by one of those 'corporate memorabilia collectors' just for that nice blue binder with the HP logo.

... and they would promptly toss out all that old useless paper inside...

I could swear my heart skipped a beat !

-J

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**John Garza (3665)** ●  
Senior Member

Posts: 549  
Threads: 42  
Joined: Aug 2016

10-16-2023, 04:14 AM

#7

OK, I scanned the notebook and it's available here:

[HP Notebook](#)

A few things I can glean from casual inspection:

\* They obviously did not have electronic documents, LANs, etc. The apparent mode of work was to have each engineer clearly print his designs on engineering paper, make photocopies and distribute to his fellow team members.

\* There is some duplication due to this, but I scanned everything regardless for the sake of the historical record. Including doodles.

\* All the original green engineering papers are signed Chung Tung - so I presume this was his notebook.

\* Interesting early ideas on the 'small calculator' (to eventually become the HP-35) from Tom Osborne. Including a programmable version. Interestingly they called the programming mode 'Learn Mode', like the TI calculators. However this predates the TI programmables, so I wonder if there was an earlier reference or calculator that used this terminology.

\* A sort of 'quick reference card' on how to use the calculator was marked in pencil 'don't leave out at night'. Interesting.

Enjoy!

-John

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**brouhaha** ●  
Senior Member

Posts: 729  
Threads: 64  
Joined: Dec 2013

10-16-2023, 05:29 AM

#8

That notebook is an absolutely incredible find. It gives a lot of insight as to the planning that ultimately led to the 35, 46, and 65, and of course all the other early models were influenced as well.

I had long suspected that the HP Classic series internal architecture was influenced by the Fairchild PPS-25 chipset, which was in design but not yet publicly announced. PPS-25 was a wide-word bit-serial architecture with time-enable field operation. It had 12-bit instructions. HP apparently initially intended to use 9-bit instructions, but relatively late in development switched to 10-bit. Now we have actual evidence that HP was well aware of the Fairchild chipset, and even considered using it.

I don't have any insider knowledge, but I expect HP's decision to engineer their own chips instead was based on multiple factors:

- \* For comparable functionality, PPS-25 required more chips than the eventual HP design
- \* The PPS-25 chips had digit-parallel data paths, so they had higher pin counts, necessitating larger IC packages
- \* PPS-25 may have been too expensive; investing in their own engineering had higher up-front cost, but probably a big payoff in lower production cost

There has been for many years almost no technical detail on the Fairchild PPS-25 chipset publicly available, but in mid-2022 the Bitsavers archive scanned some documents and made them available:

<http://bitsavers.org/components/fairchild/pps25/>

I think the PPS-25 was probably influenced by other earlier electronic calculators at a lower level of integration, but I can't point out any specific influences.

In comparison, there were two branches of early calculator development at TI

- \* a wide word chipset like Fairchild and HP, as seen in TI's higher-end family, SR-50/51/52/56 and TI-58/59/60
- \* a 4-bit word, as became standard on 4-bit microcontrollers, e.g. their own TMS1000 family, the Intel 4004/4040, Rockwell PPS-4, and many Japanese 4-biters, and almost all dedicated calculator chips

Thank you SO much for acquiring the notebook and making the scans available.

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**Steve Simpkin** ●  
Senior Member

Posts: 1,526  
Threads: 19  
Joined: Dec 2013

10-16-2023, 07:20 AM

#9

There is a small reference to a Fairchild chip set in the following history of the HP-35.

"Cochran found a four-function serial-bit chip set by Fairchild that he thought he could use. He asked if they would make some modifications, but Fairchild, then the largest semiconductor manufacturer in the world, wasn't interested. They did, however, tell him that he could use the design. After all, they had gotten it from Sweda, a cash register company."

[The HP-35 Consumer Electronics, an Origin Story](#)

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**rprosperi** ●  
Super Moderator

Posts: 7,233  
Threads: 259  
Joined: Dec 2013

10-16-2023, 12:19 PM

#10

I'll add my own big THANK YOU, John for sharing this amazing find. I've only peeked at a few page so far, but it's a pretty diverse set of notes. I don't recognize the author's name, I'll peek at the HPJ issue about the HP-35 to see if he's one of the authors.

AS for organization, I assume these 1, 2, 3, etc. PDF files are simply the pages ordered as found bound in the notebook? If I knew more about digital design, I'd try to organize them into sections in a single PDF file, but that will take someone more knowledgeable than me...

Again, Thank you John, much appreciated!

**--Bob Prosperi**

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**rprosperi** ●  
Super Moderator

Posts: 7,233  
Threads: 259  
Joined: Dec 2013

10-16-2023, 01:04 PM

#11

**John Garza (3665) Wrote:** (10-16-2023, 04:14 AM)

OK, I scanned the notebook and it's available here:

\* All the original green engineering papers are signed Chung Tung - so I presume this was his notebook.

Indeed, Chung Tung was one of 3 authors of the main HP-35 Article. His 'Bio' at the end of the article says:

Chung C. Tung  
Chung Tung received his BS degree in electrical engineering from National Taiwan University in 1961, and his MSEE degree from the University of California at Berkeley in 1965. Late in 1965 he joined HP Laboratories. He was involved in the design of the 91 OOA Calculator and was responsible for the design and development of two of the MOS/LSI circuits in the HP-35 Pocket Calculator:

the control and timing chip and the read-only-memory chips. Now working for his PhD at Stanford University, Chung still manages to find time now and then to relax with swimming or table tennis.

Knowing this somehow makes this find even more special!! 😊

**--Bob Prosperi**

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**KeithB** ●  
Senior Member

Posts: 609  
Threads: 47  
Joined: Jan 2017

10-16-2023, 01:22 PM

#12

What makes it a rare find is that you are supposed to turn in your notebooks when you leave the company.

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**John Garza (3665)** ●  
Senior Member

Posts: 549  
Threads: 42  
Joined: Aug 2016

10-16-2023, 01:39 PM (This post was last modified: 10-16-2023, 01:43 PM by John Garza (3665).)

#13

And Chung later went on to lead the HP-65 project.  
According to HPJ May 1974.  
There is also an article about the HP-65 in the same issue authored by him.

-J



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**John Garza (3665)** ●  
Senior Member

Posts: 549  
Threads: 42  
Joined: Aug 2016

10-16-2023, 02:14 PM (This post was last modified: 10-16-2023, 02:24 PM by John Garza (3665).)

#14

**rprosperi Wrote:** (10-16-2023, 12:19 PM)

AS for organization, I assume these 1, 2, 3, etc. PDF files are simply the pages ordered as found bound in the notebook? If I knew more about digital design, I'd try to organize them into sections in a single PDF file, but that will take someone more knowledgeable than me...

Glad you enjoy it everyone!

Happy to be of service to the community.  
It has given me so much over the years; feels good to give back.

Yes, the filenames are the pages in numerical order. That includes some loose leaf pages found between pages bound in the 3 ring binder. I did not alter the sequence.

Agreed, it should be organized to be more meaningful/searchable. But that comes later.  
Like any archaeological dig - you document everything in-situ before moving anything around. My primary concern was to record and disseminate the raw data for posterity as this is a unique item.

I'm still amazed at all the work they did with pencil and paper. Sure, I know the tech timeline, and I know that's what they had at the time. But seeing this notebook really drives that point home. It makes the 'Small Calculator Project' even more impressive! You know the old 'build a mnemonic memory circuit using stone knives and bearskins' sort of thing.

-J

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**Eric Rechlin** ●  
Senior Member

Posts: 612  
Threads: 23  
Joined: Dec 2013

10-16-2023, 08:08 PM

#15

This is fantastic. Thank you so much for being willing to scan it after acquiring it.

I noticed they were internally 150 dpi PNGs, so I extracted all the images, optimized them (but kept them as lossless PNGs), and rebuilt a new single PDF that is a fair bit smaller, at 514 MiB (526 MB), vs 678 MiB for the zip file. I will add this to the HHC USB drive to provide one more source for this valuable historic resource.

Now if only they were 300 dpi it would be even better!

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