

SP 713 January 22, 2010 Summary: Visit to MIT Museum with Debbie Douglas

“You purchase things; you are sophisticated consumers. What is your favorite museum?” “MIT Museum” “Museum of Fine Arts” “Boston Science Museum” “Louvre” “Natural History Museum”
With mechanical things you can observe, guess what’s inside.

The slide rule is involved in the most important technologies of the 20th century. Everything you touch, breath, eat in the modern era: the slide rule shows up in every significant story...space shuttle. Pilots use something like a slide rule when they tell you to move seats in a small plane.

You can move an inanimate object and solve math problems. (photo 1)

Slide Rule Construction Activity – We find an error in the write-up for construction of 10 which halts it.

Identifying and trying out Specialty Slide Rules: “We went to slide rule Ap store”

- 2004.010.0430 Keuffel and Esser Residential Building Cost Slide Rule
- 2004.010.0477 U.S. Chemical Warfare Service, Specialty Rule for use with US War Department Training Manual 3-320, "Mortar, Chemical, 4.2-inch", C1 Table A(1), issued October 1942
- 2004.010.0488 Honyak-Kelly Co. Paper Box Board Rule (photo 5) It calculates “of a given sheet of cardboard, how many boxes you can make with it.”
- 2004.010.0516 Keuffel and Esser Cardiac Slide Rule
- 2004.010.0517 Keuffel and Esser Beatley IQ Slide Rule (photo 4)
- 2004.010.0518 O'Neill-Payne Fuel Combustion Calculator
- 1987.087.0361 Walt Disney Productions, Mickey Mouse Slide Rule (photo 2)



Figure by MIT OpenCourseWare.

Slide Rule History

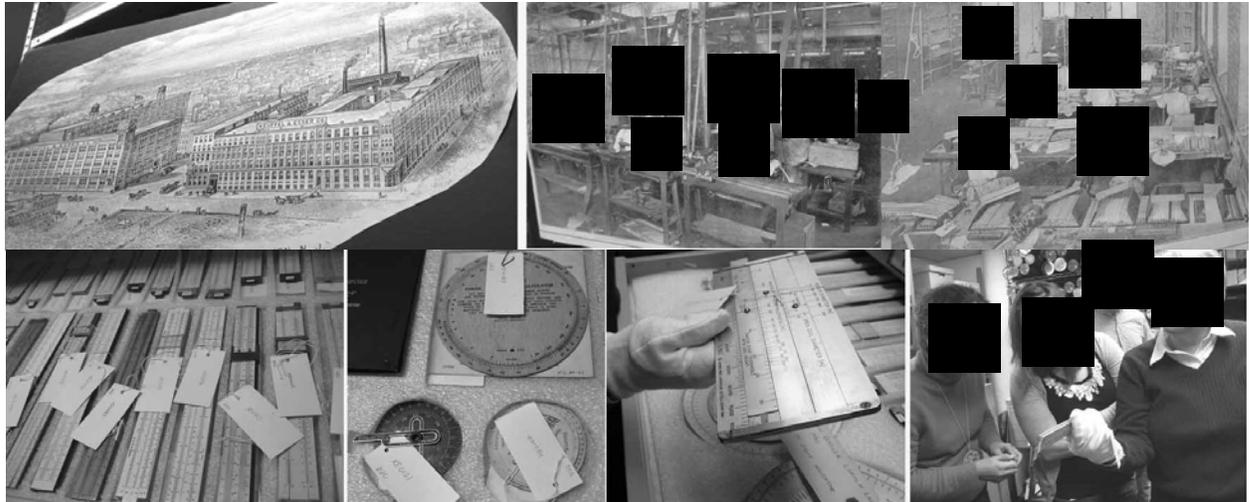
Generalized math principles that Napier figured out in 1600s. Oughtred multiplied and divided with a logarithm scale and made circular rules. For a couple hundred years the slide rule is used principally for tax collection. They taxed alcohol. The Scottish poet Robert Burns and Thomas Payne were tax collectors. James Watt, famous for the steam engine, developed the Soho slide rule to calculate pressures and power; it was a proprietary secret, his slide rules were coveted, accurate. In mid 19th c, Amedee Mannheim was in artillery, concerned that the canon ball hit the target. He modified the slide rule; this ABCD scale is his invention: 10 inches long, you carry in field use to do basic calculations. The military made lots of special purpose rules. First uses of slide rules, late 19th in high schools as an interesting way to do math. At MIT 25% of your classes were drawing, the most important thing was your drafting table. Draw the machine. Engineering shifted toward math. 20th c professors teach with the slide rule.

The only thing you typically calculate to 3 digits is gasoline price. A boy visiting the museum yelled “MIT has the greatest new invention! A green calculator!” The Slide Rule.

At exam time, the room was filled with the sound of moving slides, the sound of stress. You want to adjust your slide rule before the exam. A visceral feel to it, you touch and handle it everyday: sentiment.

Scenes from the workrooms of the Keuffel and Esser plant (photos 7-10) that made slide rules, graph paper and other instruments. The slide rule cursor line was a thread from a black widow spider! The scenes show steps in the production process. Different make-up of the laborers involved in each step. Women did the testing of the rules (photo 10). It was important for the rules to be accurately marked.

1000+ Slide Rules in the Storage Shelves of the Museum (photos 11-14)



Galileo, *The Assayer*, 1623 (p. 237-8, Drake translation)

Philosophy is written in this grand book, the universe, which stands continually open to our gaze. But the book cannot be understood unless one first learns to comprehend the language and read the letters in which it is composed. It is written in the language of mathematics, and its characters are triangles, circles, and other geometric figures without which it is humanly impossible to understand a single word of it; without these, one wanders about in a dark labyrinth.

“I know that labyrinth!”

The truth is that all learning begins precisely when you open yourself up. You say I don’t understand and you keep poking at it that is when you can really learn, when you are really truly vulnerable. Otherwise you may master a skill, you can’t learn a language unless you open yourself up. Dreams and swearing in a new language – where you let yourself be vulnerable to learning it.



Calculation Machines:

Comptometer (photo 16)

Burroughs, Class 3 Adding Machine IN-1076

Burroughs, Class 3 Adding Machine (slightly different model; photo 16)

IN-1667 Marchant, Model KC (?) One of the first keyboard models made by Marchant (photo 17)

2008.023.031 Brunsviga, Trinks-Triplex (photo 15)

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