

Slide Rule to the Moon

Prepared for HPCC 2025

Presentation by Nigel Rumble

Slide Rule to the Moon

Catalyst of Change



Beginnings

FIVE-FIGURE LOGARITHMIC
AND OTHER TABLES

BY
FRANK CASTLE, M.I.Mech.E.

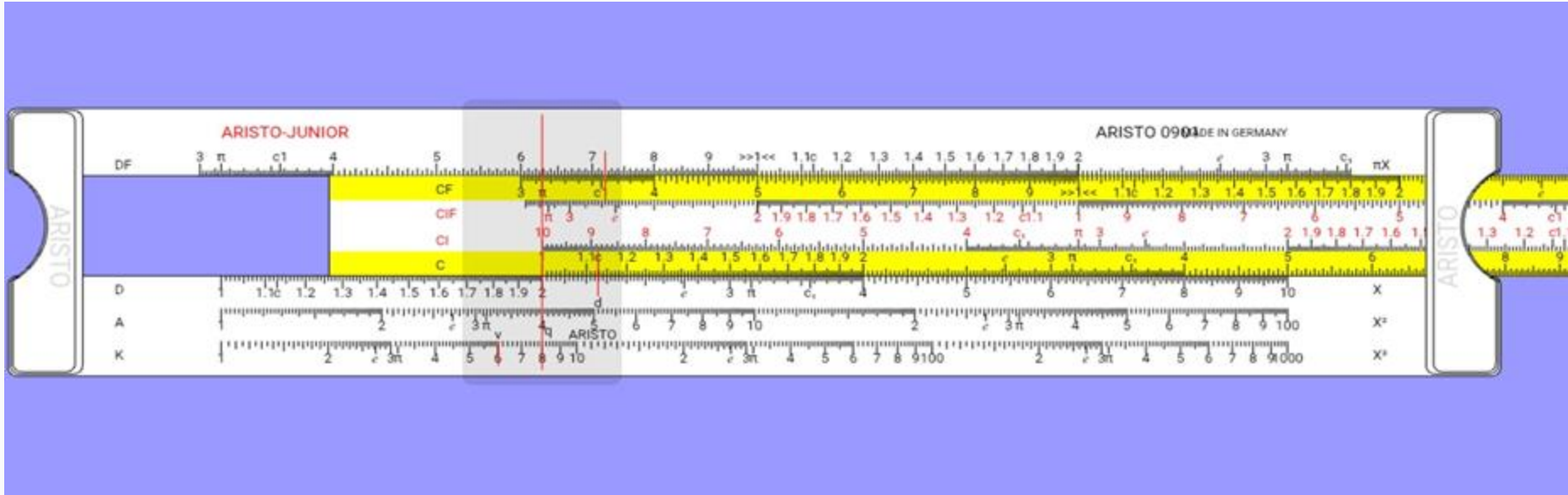
LONDON
MACMILLAN & CO LTD
NEW YORK: ST MARTIN'S PRESS
1959

[illegible]

Adding Logs on bones or rods and rulers - the Slide Rule



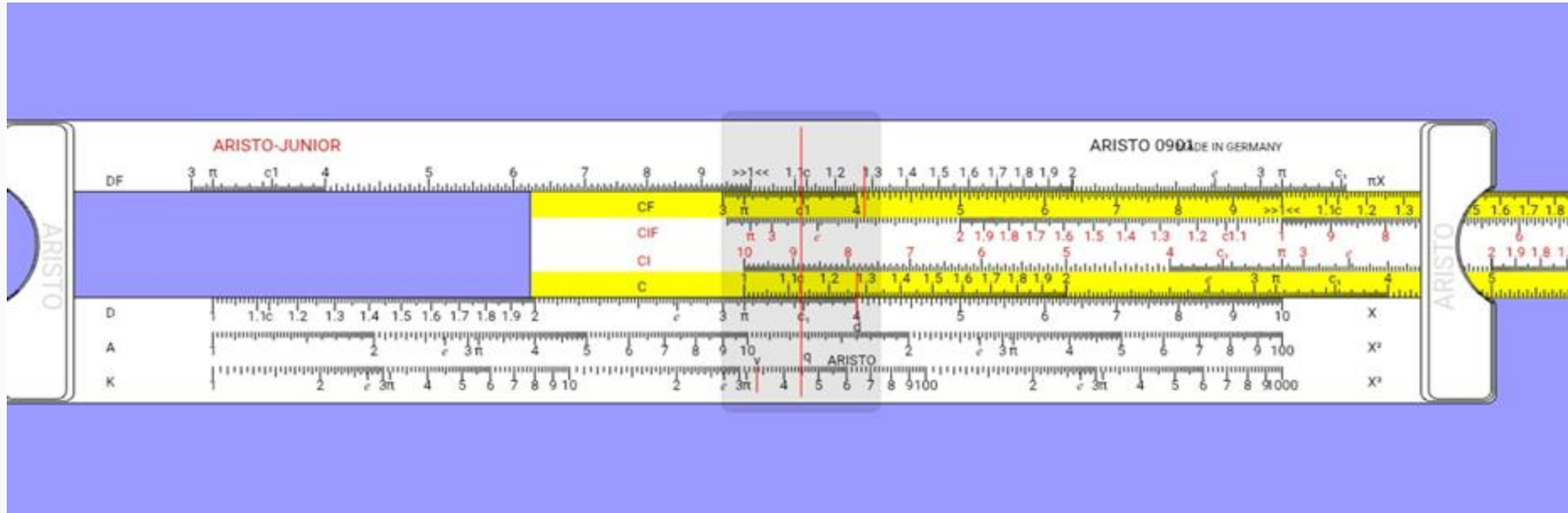
Example of multiplication on a slide rule



Simple set up for $2 \times x$

Question How do you perform $2 \times 6, 7, 8$ etc without resetting slide?

Example of division on a slide rule

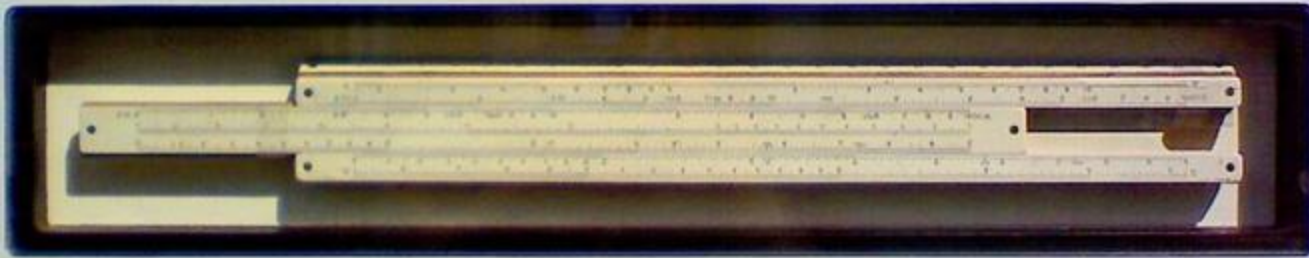


In this example we are performing a division $355/113$ which we know is a helpful approximation for π to 7sd. Note the slide index 1 has π as the answer.

Further LIVE examples will be presented after this presentation

VON BRAUN

(1912-1977)



AN ENGINEER'S TOOL

While a manager and public figure, Wernher von Braun stayed close to the work of engineering and design, using this slide rule for calculations.

Manufacturer: Albert Nestler A.G., Germany

Lent by the U.S. Space & Rocket Center, Von Braun Collection

Shortly after NASA was created, the U.S. Army Ballistic Missile Agency research group led by Wernher von Braun was transferred to the civilian space agency, and in 1960 it became the core of NASA's Marshall Space Flight Center in Huntsville, Alabama.

Until 1970 von Braun served as the first director of the Marshall Center, which was responsible for developing rocket engines and launch vehicles, including the American "Moon rocket," the giant Saturn V.

Von Braun was an avid proponent of space exploration. In the 1950s he collaborated on a series of popular magazine articles and television shows depicting future space travel.

Gifted by the U.S. Space & Rocket Center, Von Braun Collection



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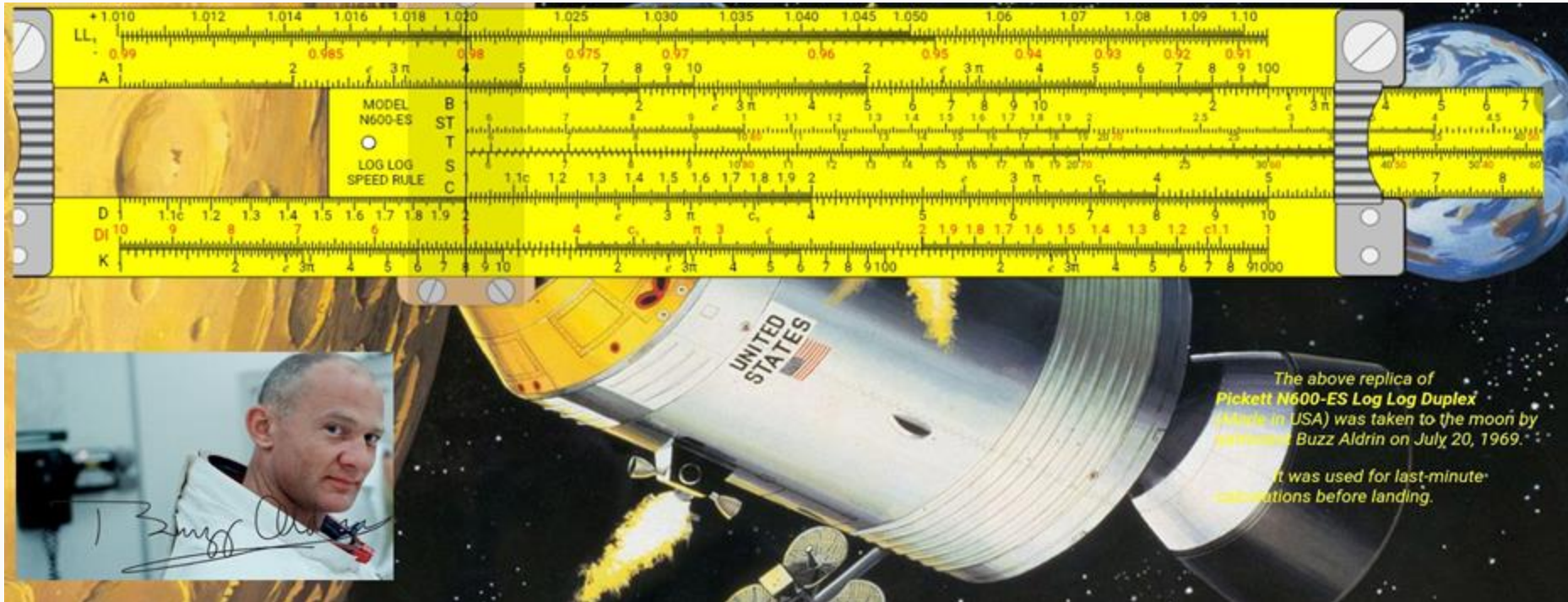
Slide Rule to the Moon

Slide Rule to the Moon

Can this be true?



Here is the proof. Probably the most collectable slide rule on Earth!



The above replica of
Pickett N600-ES Log Log Duplex
(Made in USA) was taken to the moon by
astronaut Buzz Aldrin on July 20, 1969.

It was used for last-minute
calculations before landing.

Slide rules did travel all the way to the Moon and back.

Slide Rules in space.

Pocket slide rules made by Pickett acted as a backup aid to the flight computers. Used for example for doing quick fuel calculations in the LEM.

But this is not the complete story ... Slide rules were used by the rocket scientists and engineers during all aspects of the design work. They were the Engineer's Tool of choice.

This is the thing, in real world calculations, an accuracy of 3 to 4 significant digits is all that is required, especially with iterative mechanical design systems.

Therefore, the Apollo Saturn 5 was in part designed with help of slide rules.

What about calculations that required greater accuracy and precision?



The computers!

Believe it or not the term back in those pioneering days also referred to people called computers, someone who computed.

Naturally, there were also early mainframe computers too but they tended back then to be slow to program and with lack of qualified computer scientist to drive these machines. The fall back was the person with calculating machines, mechanical not to be confused with the modern day calculator (HP-35) -7 years away!



Slide Rules in the modern form were used every day to solve every on the go computation

Slide Rules developed at great speed with modern advances using special plastics for enhanced stability and legability. ARISTO using plastic called ASTROLON. New custom scales were created to solve formula based pre-computed advanced calculation such as;

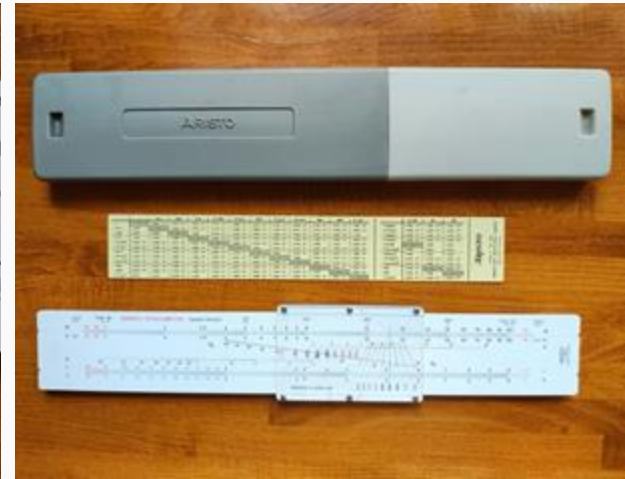
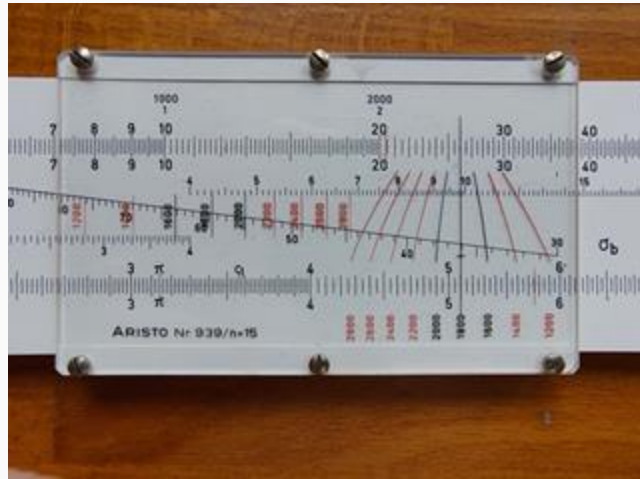
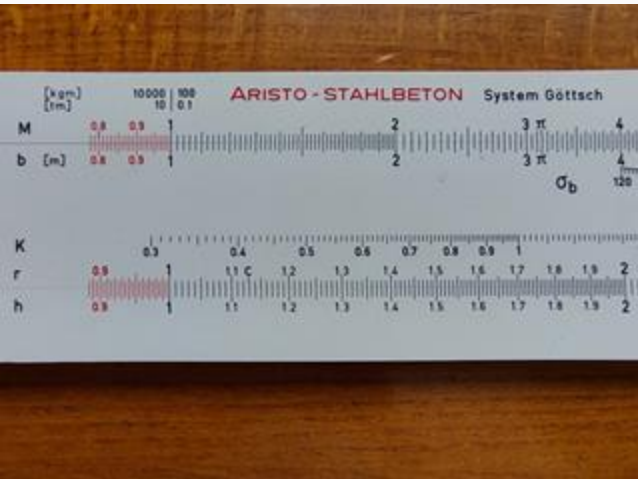
Radiation Dose Protection, Concrete Reinforced Steel, Gamma and X-Ray Radiography, EKG (Eltrocardigram), Elektro (Electrical). The list was endless and slide rules were created to cover all scientific fields and professions.

Some slide rules were nothing more than sliding tables with windows, with dedicated functions, often found in medical and photography applications.

These were the forerunner to the mobile apps that are common place today.

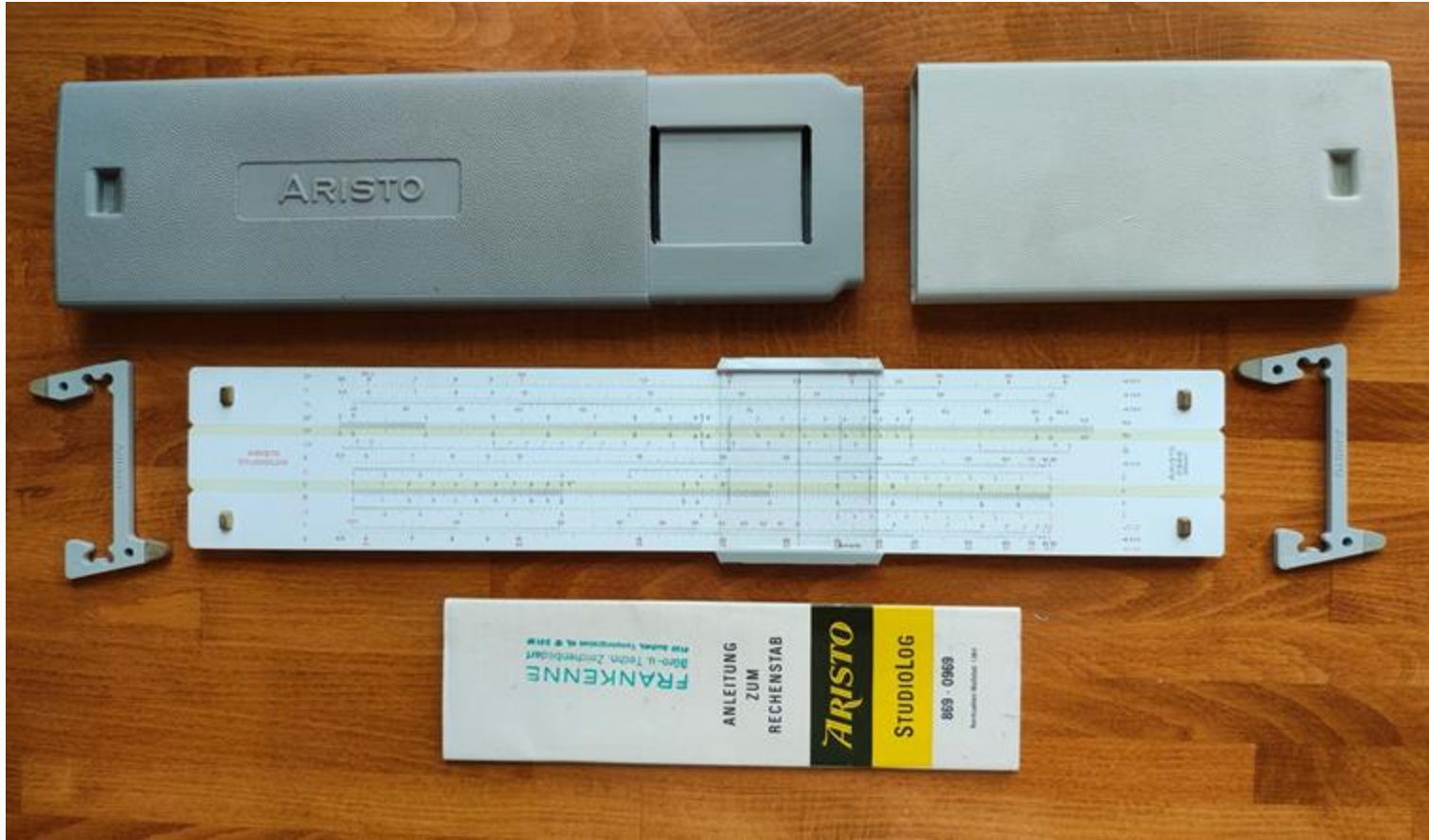
Welcome to my Collection

From collecting HP calculators to Slide Rules

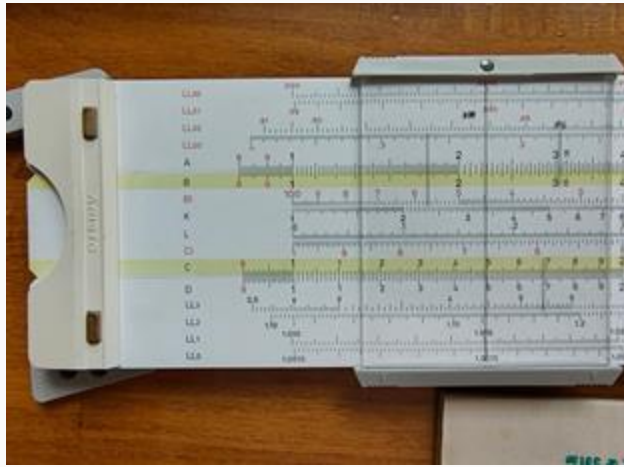


Here is my most unusual slide rule for Concrete structural design with a beautiful cursor which has the most complex curves.

To the largest mainstream Slide Rule of its day. What HP would this be equivalent to?



This represents my largest investment to date. It is an ARISTO STUDIOLOG 0969



There is one other slide rule which was used for telecommunications which tend to use hyperbolic functions that is the ARISTO HYPERLOG 0972. The last which I did attempt to secure sold for \$800!

This has 5 hyperbolic function scales which is very highly sought after.

Which was first HP to have a HYP key?

OK so you have the HP Holy Trinity of Calculators !

HP-35, HP-65 and HP-67

You do not stop there

HP-41C, CV and CX HP-42S, HP-27S and HP-28C and S

What does the above equate to = COLLECTOR

You decide on getting a few Slide Rules

Perhaps you select ARISTO, Faber-Castell, British Thornton /PIC and UNIQUE....

You start the acquisition process !

Buy the first, second and perhaps third easy.

The excitement and anticipation mounts !

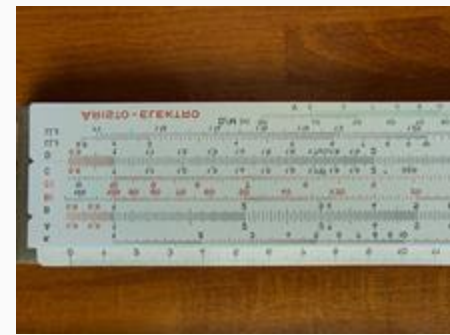
We have all been there after all we have been doing this with HP Calculators, right so what's the difference!

No Difference = YOU ARE A COLLECTOR

Where to stop, look at the costs, check on storage space for growing collections.

Perhaps need a new house with Museum Out-House. You are a Museum!

Gallery of a Slide Rule Collector...



Gallery of a Slide Rule Collector ... It grows and

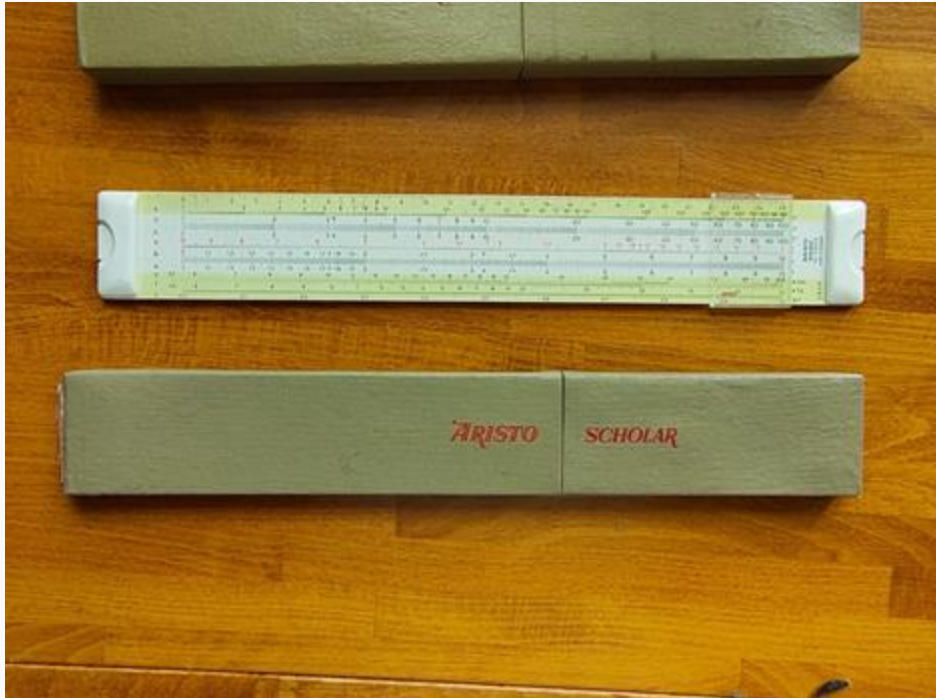


A photograph showing a slide rule with a white face and black markings. The slide rule is partially visible, showing the scale and the green cover. It is lying on a wooden surface.



Gallery of a Slide Rule Collector ... It grows and GETS WEIRD !

You buy a bundle that comes with something ODD..



It's scales A,B,C and D Back to front. Perhaps time to RETIRE !

Now for something different Virtual demonstrations of the Slide Rules

Last discussion at HPCC 2023 I presented a talk on HP Emulators

This year I have achieved (if it works LIVE on screen) the equivalent on slide rules !

THE DEMO

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