AccessionIndex: TCD-SCSS-U.20121208.048
Accession Date: 8-Dec-2012
Accession By: Prof.J.G.Byrne
Object name: Burroughs mystery sliderule
Vintage: c.19xx
Synopsis: Probably a manual tool for offline use with punched-cards.

Description:
Until 2025 this was a mystery sliderule. In c.2014 Professor John Byrne had asked Dr Brian Coghlan to identify it, leading to sporadic attempts to do so, searching the many copies of the Journal of the Oughtred Society, part of a nearly complete set of issues from 1991 to 2013 held in this Collection (see elsewhere in this catalog), extensive searches of the worldwide web, visits to Cambridge's Whipple Museum and to Bletchley Park (who circulated the image of Fig.1 to other experts without success), and visits to other computing museums in the U.K. and Germany.

Then in November 2025 Brian Coghlan circulated the image to Brian Randell, Paul Hockie and Ralf Buelow (colleagues in the *Ludgate Team*). Paul (ex-Burroughs) suggested its purpose was as a maintenance/calibration tool for Burroughs accounting machines. Brian Randell forwarded the image to Dag Spicer of the Computer History Museum, who suggested circulating to the members of the Oughtred Society, but also circulated the image to colleagues in CHM. One of the latter, Carl Woodland, submitted it to some large-language model A.I. systems. From Google's Gemini 3:

Based on the image, this is a **printer alignment gauge** (or spacing ruler) manufactured by the **Burroughs Corporation**. Here is a breakdown of the features that identify it: …

From OpenAI's GPT5.1 Pro:

Short answer: **I don't agree with Gemini's "printer alignment gauge" explanation**.
It is a Burroughs item (you can read "Property of Burroughs" on the center strip), but the piece matches the **program/index strip from a Burroughs accounting/bookkeeping machine**, not a general tractor feed printer ruler.

Why the "program bar/index" ID fits better
- Burroughs posting/accounting machines used removable program (control) bars to automate a run. Each program bar had a visible program index for the operator that showed, stop by stop, what the machine would do—tab, line space, add/subtract in a register, print totals, etc. Burroughs documentation explicitly describes these: a "visible program index…an integral part of each program bar," used to indicate actions and positions on the form. [2]
- Those machines also had a front scale that indicates printing positions and corresponds to the scale on the tabulator stop bar—exactly the kind of position marks you see running along the middle strip. [3]
- The symbols you see—**lots of "V" marks (vertical spacing), a "T"/tab symbol at the right, and numbers in some cells**—are consistent with the kind of operator cues shown on program/index strips, which document what happens at each tab stop. Burroughs literature notes that program bars control carriage movement, addition/subtraction, and printing of totals, and that the bars are **removable/replaceable** for different jobs—again matching a separate, labeled strip. [2]

If you want a close conceptual comparison (not Burroughs specific), museums list program bars and frames for period accounting machines that served this same purpose—programming and showing the sequence of actions across a form. [4]

ChatGPT's alternative response was more enlightening:

This object is an **old mechanical aid for working with punched-card codes**, specifically a **Burroughs "key-punch / card-code translator" slide rule**.

What it is
It's a pair of sliding cardboard/plastic strips printed with:
- **Hollerith punched-card column codes** (the rows of circles and dots)
- **Corresponding alphanumeric characters** (the "**V**", "**O**", numbers, etc.)
- The printed text **"Property of Burroughs"**, a historical computer-equipment company

These tools were used by operators in the punched-card era (1950s–1970s) to **decode or encode punched-card patterns**: you would slide the strips until the hole pattern you saw on a card lined up with a character printed on the tool, telling you what character the punch represented.

What it was used for

- Training new key-punch operators
- Checking damaged or ambiguous punched cards
- Manually interpreting punch codes without needing a machine

1. Background: Hollerith / IBM Punched-Card Code

A standard 80-column punched card has 12 rows: 12, 11, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
Characters are represented by punching one or more of those rows in a given column.

- **Digits** use **one punch** (row 0–9)
- **Letters** use **two punches** (one "zone" 12/11/0 + one "digit")
- **Special symbols** may use two or three punches

Your slide rule aligns these punches with the printed character that they represent.

2. What the Symbols Mean

On your device:

- **Open circles** (**O**) represent possible punch positions
- **Dark dots** (**●**) represent the punches actually present
- **Letters/numbers** above indicate the decoded character
- The repeated **V** shapes on the top strip are not letters; they mark alignment for different character groups

By sliding the strips, you match a pattern of dark dots with the code printed above it.

3. Example: How You'd Use It

Imagine you have a card column punched in:

- **Row 12**
- **Row 5**

On a punched card, that pattern equals the letter "**E**" in Hollerith code.
Using the slide rule:

1. Find the dot pattern matching holes in rows **12** and **5**
2. Slide the rule until the pattern lines up under a printed character
3. Above it, the slide rule shows **E**

This let an operator "read" a column even without a machine.

4. Why Burroughs Made These

Burroughs Corporation made:

- Key punches
- Verifiers
- Tabulators
- Mainframe computers

This slide rule was a quick field tool for:

- Troubleshooting bad keypunch machines
- Training new operators
- Decoding damaged cards sent from customers

Which machine is this from?

Based on the shape, length, hole spacing, and the printed symbol layout, this card matches the **Burroughs Sensimatic / Burroughs Class 31–32 / Burroughs Class 50** family of electromechanical accounting machines (1950s–1960s).
These machines all used **long, narrow program selector cards** exactly like yours.
Most likely matches:

- **Burroughs Sensimatic** (popular mid-1950s → 1960s)
- **Burroughs Class 32** Adding-Listing machine
- **Burroughs "F" Series Accounting Machine** (similar card format)

If you want, I can compare yours to catalog examples to pinpoint the exact series.

☑ What the symbols mean

These cards encoded "programming steps" for the machine. Since the selector pins physically pushed through the card, printed symbols served as instructions for the operator:

O Circles: These represent inactive / open selector positions — pins pass through without engaging a function.
V-shapes (upward V): These represent active function settings.
Each column corresponds to one machine function, such as:

- add/subtract control
- print position enable
- carriage movement
- column shift
- accumulator selection

Different models used slightly different symbol sets, but the **V generally means "engage this function"**.
Arrow-like symbols (looks like a V with a tail): These correspond to **special actions**, such as:
- printing a total or subtotal
- triggering a skip/space
- switching to a different accumulator
- setting a logical flag

Rectangular "⊐" (or bracket-shape): Usually indicates **end-of-cycle / print-zone boundary** or **carriage return limit**.
Holes on the ends: These are **mounting holes for the machine's card frame**, letting the strips slide in and out.

☑ What the card actually did
This type of strip tells the machine:
- which columns to read
- where to print numbers
- which accumulator(s) to total
- when to print summaries
- how to format output (spacing, item totals, etc.)

It is basically a **mechanical program** — a predecessor to punched card programming.

More Details
I'll give you all three targeted identifications so you can match your strip precisely.
If you want to go deeper on any part, just tell me.

☑ 1. Narrowing down the exact Burroughs model
To make a positive ID, the key distinguishing features are:

✓ Length

Burroughs program strips came in three common lengths:
1. **~27–28 cm** → Class 31 / 32 (Sensimatic era)
2. **~31–32 cm** → Class 50 & Class 280
3. **~35–36 cm** → Burroughs E-101, E-202, late-50s models

Your photo strongly suggests the **shortest type**, because the proportions match the 27–28 cm style.
If you can tell me the **exact length**, I can confirm the model.

☑ 2. The meaning of the symbol rows on your specific strip
Based on the arrangement in your photo:
- **Top row**: mostly "V" symbols → This is almost always the **print control / carriage positioning** row.
- **Middle row**: almost all circles → This is the **accumulator selection** row (**o** = inactive).
- **Bottom row**: mixed V and "tail-V" symbols → Usually **conditional totals, subtotals, or spacing commands**.

The fact that your strip uses **three symbol bands** instead of four means: → It is from a **mid-level 1950s accounting machine**, not the high-end 280 series (which used 4–5 rows). This is another clue pointing to the **Burroughs Class 31 / 32 (Sensimatic)** family.

☑ 3. How operators used it (step by step)
In case you're curious how this object lived its "working life":
1. The machine operator slid this strip into a **program frame** on the front panel.
2. Steel pins inside the machine were spring-loaded.
3. As the carriage moved left-to-right, the pins pressed into the strip.
4. Where a **V-symbol** was printed on the card, the technician had punched or shaped the card so a pin could drop into a recess and **trigger a mechanical switch**.
5. The mid and bottom rows would tell **which accumulator to total**, whether to **print**, **skip**, **space**, **tab**, or **carry**.
6. When the strip ended, the final symbol (looks like ⊐) would mark a carriage return zone.

It is basically a mechanical program—the predecessor of a program ROM.

This is not convincing, as immediately at the beginning it says *"It's a pair of sliding cardboard/plastic strips"*, which clearly it is not. However, the statement *"This object*

is an old mechanical aid for working with punched-card codes, specifically a Burroughs 'key-punch / card-code translator' slide rule" may be closer to the truth. Considering ☑ 1. above to find the exact Burroughs accounting machine model, dimensionally this sliderule is likely to be imperial, not metric, and:

[1] The distance between each outer **V** is 16.05cm (6.319").
[2] There are 19 of the **V**, so the step distance is 16.05/18=0.81967cm (0.351").
[3] The distance between the top outer bars (with 3 vertical bars) is 8.9167cm (3.51").
[4] The distance between the hatched **T** and outer **V** is 0.5", so allowing another 0.5" at the other end the overall length of the scale is 6.31+0.5+0.5"=7.31".

At 7.31" = 18.56cm it cannot be a Burroughs program strip, instead the dimensions do tend to suggest punched cards. Wikipedia says:

> *At some point, 3.25" by 7.375" (83 by 187 mm) became the standard card size. These are the dimensions of the then-current paper {US$} currency of 1862–1923. This size was needed in order to use available banking-type storage for the 60,000,000 punched cards to come nationwide.*

Hence this may indeed be a *'Burroughs 'key-punch / card-code translator' slide rule'*. But punched-cards were also widely used in Burroughs computers, so this sliderule may have been a general tool for use with punched cards, not specifically linked to their accounting machines. And A.I. was useful. Further investigation is needed.

*Trivia: ChatGPT gave an example of checking for letter "**E**", which is intriguing.*

Professor Byrne may have acquired this sliderule during the time there was a Burroughs B1714 computer in the Department of Computer Science in Trinity College Dublin, see elsewhere in this catalog. Rachel Noctor, the original operator of the Burroughs B1714, refers to the logbook of B1714 faults [11]:

> I think given the season that's in it I'll get very short shrift if I approach anyone and ask them to try and identify something from the 70's. I note your comment that one of the Ludgate team thinks it was a maintenance tool for printers but that the one listed in the manifest is not a Burroughs printer? I just looked back at the logbook (you sent the link a while back) with the reporting faults for Burroughs: many of them related to printer problems and other issues of course but the important thing to note is that the people who came to service the machine were Burroughs engineers - they would hardly do that if it wasn't a Burroughs printer and why would we record multiple printer problems in that logbook along with the more general issues with the OS?
>
> I see David's name listed in that book as well as Daphne and Rosemary - have you checked with them?
>
> The other thing I think you should try (and apologies in advance if you have already done so) is to check out Facebook for Burroughs allumni or special interest groups. I'm not on social media but I found a couple of links - see below: one is Burroughs Alumni the other from a google search for 'Burroughs B1714 sliderule':
> https://www.facebook.com/groups/67023107588/posts/10166361699112589/
> https://www.facebook.com/groups/ProfessionalMainframers/posts/2537819533239737/
>
> My final thought is that it's marked *Property of Burroughs* it could just well be something that the Burroughs engineers used - according to the record of faults they were certainly around an awful lot - perhaps it was left in the computer room for convenience (sorry that doesn't really help much!).

In response to this from Paul Hockie (ex-Burroughs):

> {Possibly} Burroughs OEM'ed printer. They couldn't get the sales volume up on mainframe printers until the B1700 and later. In the early 1970s the bought the ODEC Corp 300/600 line printer. For Europe these were made in Cumbernauld.
>
> The reason the device is property of Burroughs is that it would come from the OEM and is therefore now, "Property of Burroughs". Probably left behind by an engineer, although TCD would have one of their own. Remember commercial organisations would have several types of continuous stationary - invoices, statements, shipping notes order forms each needing its own format tape. Now read:
> https://www.bcl-computers.org.uk/los/general/dri.htm
> https://en.wikipedia.org/wiki/IBM_Machine_Code_Printer_Control_Characters

Para ‘How Printer Control Characters work’. Note different manufacturers had their own value adds.

Replacing tapes was an operator responsibility along with changing paper, and back-up tapes. An engineer was only required for preventive maintenance and if there was damage to the mechanism.

The device had nothing to do with accounting machines.

Perhaps the explanation for how this sliderule was actually used will arise when someone reading this document online says ‘eureka’ …

The homepage for this catalog is at: https://www.scss.tcd.ie/SCSSTreasuresCatalog/
Click *'Accession Index'* (1st column listed) for related folder, or *'About'* for further guidance. Some of the items below may be more properly part of other categories of this catalog, but are listed here for convenience.

Accession Index	Object with Identification
TCD-SCSS-U.20121208.048	Burroughs mystery sliderule. Probably a manual tool for offline use with punched-cards. c.19xx.
TCD-SCSS-V.20121208.528	Journal of the Oughtred Society, part of a nearly complete set of issues from 1991 to 2013. A small format commencing vol.0, no.0 Aug. 1991 and ending vol.4, no.2 Oct 1995. 1991.
TCD-SCSS-V.20121208.529	Journal of the Oughtred Society, part of a nearly complete set of issues from 1991 to 2013. A large format commencing vol.5, no.1 March 1996 and ending vol.22, no.2 Fall 2013 (missing 12:1:2003 & 19:1:2010). 1996.
TCD-SCSS-V.20121208.892	TCD-SCSS-V.20121208.892 Supplement to the Journal of the Oughtred Society, part of a nearly complete set of issues from 1991 to 2013. A large format supplement to the Fall 2009 issue. 2009.
TCD-SCSS-T.20121208.032	Burroughs 1714. Commercial zero-instruction-set computer used by the Dept.Computer Science from 1973-1979. Just two prototyping boards survive. c.1972.
TCD-SCSS-V.20250722.010	Burroughs Records of reported Faults. Faults during 1976-81 on the Burroughs B1714 at Trinity College Dublin, 1976.

References:

1. Wikipedia, *Slide rule*, see:
   https://en.wikipedia.org/wiki/Slide_rule
   Last browsed to on 20-Nov-2025.

2. Jerry T. Rogers, *Automation in the Accounting Systems of Small Manufacturing Corporation*, Thesis, Texas Technological College, June 1968, see:
   https://bitsavers.org/pdf/burroughs/Series_E/Rogers_Automation_in_the_Accounting_Systems_of_Small_Manufacturing_Corporations_Jun68.pdf
   Also: https://www.scss.tcd.ie/SCSSTreasuresCatalog/sliderule/TCD-SCSS-U.20121208.048/JerryRogers-Automation-in-the-Accounting-Systems-Jun1968.pdf
   Last browsed to on 20-Nov-2025.

3. Burroughs, *Class 78 bookkeeping machine operating instructions*, see:
   https://www.burroughsinfo.com/uploads/3/4/4/5/34455849/burroughs_class_78_bookkeeping_machine_operating_instructions.pdf
   Also: https://www.scss.tcd.ie/SCSSTreasuresCatalog/sliderule/TCD-SCSS-U.20121208.048/Burroughs-Class-78-BookkeepingMachine-operating-instructions.pdf

Last browsed to on 20-Nov-2025.

4. London Science Museum, *National Class 31-32 accounting machine with frame program bars and instructions*, see:
https://collection.sciencemuseumgroup.org.uk/objects/co59589/national-class-31-32-accounting-machine-with-frame-program-bars-and-instructions
Last browsed to on 20-Nov-2025.

5. Burroughs, *Quiet Standard Typewriter*, see:
https://www.scss.tcd.ie/SCSSTreasuresCatalog/sliderule/TCD-SCSS-U.20121208.048/Burroughs-Quiet-Standard-Typewriter.pdf
Last browsed to on 20-Nov-2025.

6. Burroughs, *Series J Ten Key Adding Machine Instruction Book*, May 1965, see:
https://www.scss.tcd.ie/SCSSTreasuresCatalog/sliderule/TCD-SCSS-U.20121208.048/Burroughs-Series-J-TenKeyAddingMachine-Instruction-Book-May1965.pdf
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7. Burroughs, *Series F2000 Computer Instruction Book 3747*, December 1962, see:
https://www.scss.tcd.ie/SCSSTreasuresCatalog/sliderule/TCD-SCSS-U.20121208.048/Burroughs-Series-F2000-Computer-InstructionBook-3747-Dec1962.pdf
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8. Burroughs, *L/TC Basic Assembler Reference Manual*, November 1971, see:
https://www.scss.tcd.ie/SCSSTreasuresCatalog/sliderule/TCD-SCSS-U.20121208.048/Burroughs-L-TC-BasicAssembler-ReferenceManual-1045481-004-Nov1971.pdf
Last browsed to on 20-Nov-2025.

9. Ryena Dhingra, *A Brief History of Punched Cards*, 10th August 2025, see:
https://www.scss.tcd.ie/SCSSTreasuresCatalog/sliderule/TCD-SCSS-U.20121208.048/Brief-History-of-Punched-Cards-RyenaDhingra-10Aug2025.pdf
Last browsed to on 20-Nov-2025.

10. Wikipedia, *Punched Card*, see:
https://en.wikipedia.org/wiki/Punched_card
Last browsed to on 20-Nov-2025.

11. Trinity College Dublin, *Burroughs Records of reported Faults*, logbook of B1714 faults, 1976, see:
https://treasures.scss.tcd.ie/literature/TCD-SCSS-V.20250722.010/TCD-SCSS-V.20250722.010.pdf
Last browsed to on 20-Nov-2025.

Figure 1: Burroughs mystery sliderule, front view

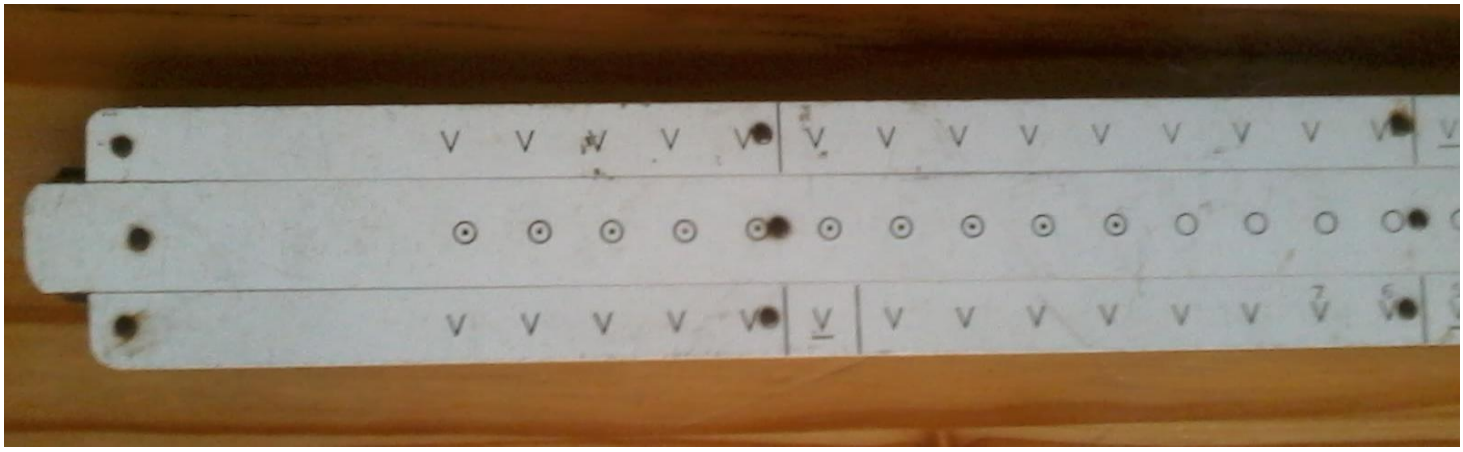

Figure 2: Burroughs mystery sliderule, left front closeup

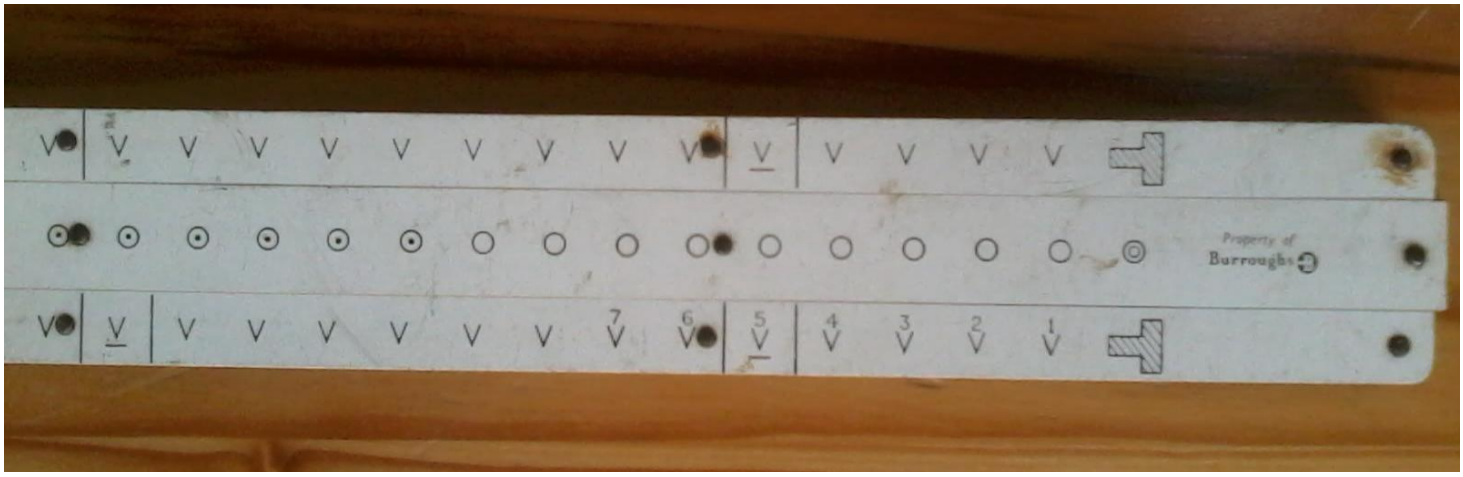

Figure 3: Burroughs mystery sliderule, rightt front closeup