
UNIQUE Slide Rules

Peter Hopp, Colin Barnes and John Knott

Introduction

The UNIQUE Slide Rule Company of Brighton, Sussex, produced a quite unique design of slide rule that was both loved and hated by generations of school children and technologist alike. Their most common slide rules were “cheap and cheerful” with celluloid covered paper scales on wooden stock and slide. Later the company produced a range of all-plastic slide rules which were similar to those from many other manufacturers. A “good” UNIQUE was as good as any cheap slide rule, however they were far more sensitive to sun and water than other rules, an excess of either could result in a warped horror with discoloured and peeling scales only fit for the rubbish dump. The cheapness of the rules resulted in them being a popular “first” rule that was common in schools, and meant that many students first meeting with a slide rule was with a UNIQUE - particularly in the 1970’s when the UK’s “New Mathematics” curriculum specifically required familiarity with the slide rule. This idiosyncratic device with it’s characteristic arrangement of scales either continued to serve the owner well or was replaced by a more expensive rule with longer lasting qualities and better facilities.

Company History

UNIQUE, The Unique Slide Rule Company of Brighton, was set up in 1920 by Burns Snodgrass MBE (awarded in 1919 for war services), a mechanical engineering lecturer at Brighton Technical College. The earliest rules, a batch of 10 for his pupils at the College who could not obtain a suitable rule, were made by hand in his bedroom at his house in Moulscombe, Brighton, in August 1920. The first batch of slide rules for sale by Norton and Gregory, a wholesale company who were well-known purveyors of all types of mathematical instrument, were delivered in October 1921. Slide Rules continued to be manufactured on a part time basis at Moulscombe and then Carden Avenue for the next 7 or 8 years by Burns Snodgrass on his own, the first Unique employee being taken on in 1931.

Burns Snodgrass started making set squares in 1925, and adjustable and draughtsmans scales in about 1930. The first Log-log slide rules were made in about 1928 or 1929. The real development of UNIQUE can be seen as stemming from an advert in the Bargain Column of the Daily Mail in 1931 for slide rules at 12 which created a considerable increase in demand. Over the next two to three years an additional two people were employed. However, a slump in sales in 1934 meant that two of the three employees were released, and Burns continued in business with one employee and the part time assistance of his son Donald during school holidays. The Scientific

Instrument Exhibition in South Kensington in 1935 included a wholesaler who exhibited Unique slide rules, this added considerably to Unique’s prestige and once again increased demand. Slide rules were being made for a number of companies including Baird and Tatlock, W.H. Smith and Marine and Overseas (British Slide Rule Company). Burns finally resigned from the Brighton Technical College in 1937 so that he could become a full time manufacturer of slide rules and other mathematical instruments. Donald Snodgrass rejoined Unique at the end of World War 2 after 6 years service in the RAF. He travelled all over the world selling slide rules and other mathematical instruments in many countries including all parts of the British Empire, the USA, Japan, Australia, the Middle East, and South America. In the UK Unique still used a number of wholesalers as their major sales outlet. The firm Classic Supply, later Technical Sales who were Aristo agents and then sold their own design of slide rules which were made in Japan, were the main wholesaler for all other Unique mathematical instruments apart from slide rules. The firm moved within the Brighton area a number of times, the first move by the Snodgrass family was to a larger house in Carden Avenue in about 1928, a small workshop being added to the house with the intention of increasing the number of mathematical instruments made. Electricity was connected to the workshop in about 1930 and an electric motor provided the first element of automation in the production of slide rules. As more space became necessary, a plot of land was obtained in 1936/7 at London Road, Old Patcham, “near the Co-operative stores”, and new purpose built premises were built. There was an extension to the factory in about 1947. The firm moved again in 1956 to Buckhurst Road, Telescombe Cliffs, Brighton, where they stayed to 1993 when the premises were sold to Cliff Plastics Products who were neighbours, and the manufacturing facilities to Walton Design in Norfolk.

UNIQUE became a Limited Company, the Unique Slide Rule Company Limited, in 1951, and kept this name until 1975 when they stopped making slide rules and changed the name to Unique Instruments Ltd. The earliest “Teach Yourself” books (c1955) refer to the “UNIQUE” Slide Rule Co of Brighton Ltd. Burns Snodgrass died aged 68 in 1954. His son Donald Claydon Snodgrass took over as Managing Director and ran the company, with a short break due to illness in about 1975, until 1980 when ill-health resulted in his retirement as Managing Director, and his wife, Mrs. Elaine Snodgrass took over in that position. Donald continued as a Director of the Company until his death in May 1993.

Mrs Elaine Snodgrass married Donald in 1967, after which she started working in the factory as a machinist, assembler and assisting in the Administration of the Company. Donald has a sister who is still living in the area and who had also worked in the firm for ten years prior to her own marriage. The happy family atmosphere features in a number of descriptions of working in Unique throughout their time in business. Burns Snodgrass is also well known as the author of "Teach Yourself the Slide Rule," (TYSR) first published in 1955, which apart from being a perfectly acceptable treatise on the slide rule, is also useful as a reference work on UNIQUE slide rules. Donald "metricated" and revised TYSR in the late 60's or early 70's in time for the implementation of Decimal currency in the UK.

The actual numbers of slide rules manufactured by UNIQUE is virtually impossible to find out, however it is known that in 1945 they made over 100,000 slide rules. Assuming a similar output averaged over the next 25 years to 1970 when it is also known that slide rule production was beginning to tail off, we can speculate on over 2.5 Million slide rules made, and with output pre 1945 and after 1970 to 1975 it could well have reached double that figure. On the basis that the availability of rules now to the collector represents the total, UNIQUE must have been the single largest supplier of rules in the UK. Some rules were only produced in very small numbers, and probably included several "specials" for various outside agencies - e.g. The Post Office, The Ministry of Defence, various companies (some identified in Table 1) also for other "manufacturers." Adverts for UNIQUE from 1958 through 1969 say "over 25 types of rule" were available, whether this includes the dial calculators is not known. Some UNIQUE rules are marked *The Technical Supply Company* (TSC). Information available shows that they too were based in the Brighton area and manufactured slide rules for UNIQUE, though a full list of rules, why, and when is not clear. An example of a 5" Log-log rule so marked is of pattern 3 which would suggest that this was in the early days of the company, however the 1971 and 1972 editions of *Teach Yourself the Slide Rule* illustrate *Electrical* and *Dualistic* rules made by TSC. The relationship could therefore have lasted for most of the life of the company.

Having stopped manufacturing slide rules in 1975, UNIQUE continued to manufacture other mathematical instruments for the next 20 years until they finally shut their doors in 1993. So ended 73 years of an interesting small family firm with a happy record as an employer who will long be remembered for at least their unique slide rule.

Patents

UNIQUE had a number of patents on their slide rules, the first patent was granted in 1939, though the best known patent found on a number of rules is 583,637 of 1946 which relates to a cursor design change. It is surprising that UNIQUE never patented their paper/celluloid

scales technology, and for a company with such a wide range of rules they had surprisingly few patents. Known patents are as follows:

Pat. Number	Description
1939500,237	On a Commercial rule.
1944576,534	For double length scales.
194529,187/45	Provisional patent for the Friel Sturdy Rule; it is not known if this was granted.
1946583,637	Patent for cursor design changes.
1948596,635	Design of scales for Income Tax purposes.

The Slide Rules

Most slide rules manufactured by UNIQUE were of wood with celluloid covered paper scales, and were available in nominal 5" and 10" scale lengths. Some later types of rule were wood with plastic scales - in common with many other manufacturers, though the UNIQUE rules were not of such high quality. Later a small range of all-plastic slide rules was produced until they ceased production. Some of these were unusual scale lengths, 7" for *J180/181*.

There are a number of slide rules of a similar format, particularly with the celluloid covered paper scales, that may have been manufactured by UNIQUE for sale by other companies. A particular example is the Classic apparently made by Hardtmuth. Hardtmuth rules are of noticeably higher quality, though this is not so obvious with the rules carrying the Classic logo. From adverts and examples we can speculate that slide rules advertised by the British Slide Rule Co. may also have been UNIQUE manufactured. These rules are also paper/celluloid, and again the quality and finish are better. Sadly information to verify these suppositions seems no longer available.

The "Jiffy" slide rule included in the list of rules (Table 1) has nothing to show that it was made by UNIQUE other than its format and celluloid covered paper scales. Indeed the quality of the Instruction books is so much higher, with better quality paper and improved presentation, compared to the usual UNIQUE instruction leaflets, one might be forgiven for thinking otherwise. However this delightful little rule was made in tens of thousands and exported to many countries including Japan where it was unsuccessfully copied - the Japanese version jammed! UNIQUE slide rules follow a number of distinctive patterns, though the transition points can not be dated with any accuracy. It is very likely that some transitions are spread over many years so that some types of "old" pattern rules were manufactured in parallel with "new" pattern rules. The list of slide rules produced by UNIQUE in Table 1 may be comprehensive but is probably incomplete.

The following patterns of slide rule are believed to be chronologically accurate, the dates are best guesses.

[Pattern 1. - 1922?]

The earliest type of rule produced from the formation

of the company in 1922 are wood/celluloid covered paper, and may not have been marked with the UNIQUE name at all.

- The celluloid scales are nailed and glued to the wood,
- The stock is solid (Type A, Fig 1).
- The corners of the stock and slide are noticeably chamfered.
- The cursor would probably have been celluloid pinned to wooden ends. (Type i, Fig 2.)

Notes:

1. Apart from pins at each end of the scales on the stock, and the two pins at each end of the slide, there are also pins through the middle of the scales and the slide on 10" rules.
2. The chamfering on the stock and slide is another factor to look at when trying to date UNIQUE rules, though no obvious correlation has been found. It would appear that very early rules have stock and slide quite heavily chamfered. Logic would decree that it is later versions that have only the inner edge to the stock chamfered, with the ends of the slide being square. Even later versions have neither stock nor slide chamfered.
3. The number of pins and chamfering of stock and slide does not correlate, examples exist which have two pins on slide and are not chamfered - an apparent contradiction.

[Pattern 2. – 1923/34?]

This is a similar form to pattern 1, but the UNIQUE name is now used. These are a slightly later type, an example with a wood/celluloid cursor is labelled "The UNIQUE Slide Rule" on the bottom left of the stock and is a simple rule with A/B,C/D scales only. A possibly later version is similar, but has the name in a different font.

[Pattern 3. – 1928?]

A similar format to patterns 1 and 2, however the font and style of the type name changes, and is printed at the left-hand end of the slide where it stayed for many years. This is probably the pattern that saw the introduction of the Log-log slide rules in 1928. The type names are preceded by "The." "Log-log," "Universal" and "Five-ten," as well as other types have been seen in this pattern.

- Early versions have a metal edged cursor (Type ii, Fig 2). Folded plastic edged cursors (Type iii, Fig 2) appear on later versions. These are of similar shape and look to the earlier metal edged cursors, but have lost the facility for any form of very crude

adjustment that was possible with the pinned metal edge. A small folded plastic cursor is used on the "Jiffy" which is much later.

- The chamfering of the stocks and slide is still obvious.
- The "solid" stock now has a saw cut partially through the centre line of the well. The middle pin in the slide is now not seen, though the middle pin on the stock remains on 10" rules. (Type B Fig 1).

[Pattern 4.]

The "The" disappears from the type names.

- The chamfering either disappears or becomes less obvious,
- The middle pin on the stock disappears on 10" rules and there is only one pin at the end of the slide.
- Stock and cursors remain as pattern 3.

Note that the 1958 edition of *Teach Yourself the Slide Rule* illustrates a number of rules with chamfered scales, and the Log-Log rule is still called "The Unique Log-log Slide Rule," while all others have lost the preceding "The" in the names. This may be an aberration in the illustrations used, or it may be indicative that "The" continued to be used for many more years on "Log-log" slide rules.

[Pattern 5.]

The Stock pattern changes to include a spring of some material to separate the two halves of the stock (Type C, Fig 1). As with earlier patterns the slide and stock are not tongue and grooved, and adjustments to the free running of the slide are still made with sandpaper on the back of the slide and/or well of the stock. All up to pattern 5 still have glued and nailed scales.

[Pattern 6. – 1945?]

The stock pattern changes again, there are now two obvious sides to the stock. These are joined by a phosphor bronze spring that is nailed through the stocks and peened over under the scales (Type D, Fig 1). The slide now gains a tongue and there are grooves in the stock. The spring is paper/celluloid covered, and the information carried on this "label" is generally typed - not printed. Some early versions still have nailed scales, but generally scales are only glued to the stock - presumably glues had improved to the point where pinning was no longer required. Some versions of pattern 6 (later versions?) have printed rather than typed information on the reverse, and there are variants of the information on the "label" in the well of the stock.

[Pattern 7. – 1955?]

As pattern 6, but with a plain solid plastic edged cursor in either of two obvious widths - a wide cursor ($1\frac{3}{8}$ "

and a narrow cursor (1"). Some types of slide rule, for example the "Brighton" (Type G, Fig 1) which is equivalent to other companies Darmstadt scale arrangement, have an "L" shaped cursor with a small extra cursor to read scales on the bottom edge of the stock (types v and vii, Fig 2). The additional chamfered edge makes the rule bigger and carries an inches scale.

On some versions the pinning of the spring to the stock has either been hidden under the label, or the spring (still phosphor bronze) has been glued to the stock.

[Pattern 8. – 1965?]

Similar manufacturing technique, i.e. spring back, but the slide rules are narrower and the font and naming conventions change. There are several other detail changes including a new parallel line logo (See Fig 3.2). This is first illustrated in the 1965 TYSR for the "Log-log" rule only, and is repeated through to 1971 when the "Chemical" rule is also shown with the same logo.

The scales are generally biased to the right of the stock leaving space for the longer names: "Universal Two," "Universal Three" etc. Scales are still plastic covered paper. Cursors now have a curved serrated edge to the grey plastic sides that replace the previous cream plastic. TYSR illustrates serrated plastic cursors from 1965. (Type vi, Fig 2).

[Pattern 9.]

As pattern 8 but with plastic scales glued to the wooden stock and slide. There is a variant that has wooden stocks with a plastic "Bridge" joining the two halves, these may be a separate pattern on their own, or a transition design with a short life. (Type J, Fig 1).

[Pattern 10.]

The phosphor bronze spring is replaced with a plastic spring, or joining piece to the two halves of the stock (Type F, Fig 1). These are seen mainly on smaller rule such as the Jiffy,rm *Mini-Mannheim* and a number of the "specials".

[Pattern 11.]

All-plastic slide rules, probably produced from about 1965 to the end of production. The *J180*, *J181* series of closed-frame slide rules (Type H, Fig 1) are assumed to be the earlier variety, their date of introduction is taken from the publication date of Geerts' book - see later.

[Pattern 12. – 1969?]

This pattern covers the *Study* range of all-plastic rules (Type K, Fig 1) which also continued to the end of production. These are open-framed - i.e. they could be duplex, though with the exception of one possible prototype, UNIQUE do not appear to have made Duplex rules.

There are variants where the logo (Fig 3.3) and type name are in red rather than the more common black.

Minor variations

There is a multitude of minor variations on some

rules, these are listed here but cannot be accurately dated or placed with certainty within the patterns listed above.

- Patent 583,637. This is a 1946 patent, it can be assumed that rules so marked were produced between 1946 and up to 10 years later, though in all probability no later than 1950. Other patent numbers are also shown on some examples.
- H672007/44-C22B, usually accompanied by a crown, has been found on a *Universal II* rule. Other than being a UK Government sign, nothing further can be discovered about this mark. The /44 may be a date code.
- Some slide rule types, including the *Monetary*, *Junior* and *Brighton* use the "USRC" Circular Logo, (Fig 3.1). This has been seen in illustrations from 1955 onwards, and is assumed to stand for UNIQUE Slide Rule Company, but why it was only used on some types and for a limited period is not known.
- The font size used for the "Made in England" statement on the slide on some early rules is considerably smaller than on others. Whether this was a mistake on a batch or batches of rules, or was a change, is not known.
- Some UNIQUE rules were painted white - why, when and how are not known. One example of a plastic fabricated rule with celluloid scales is also known. This may have been a prototype as it follows the normal production format with two plastic sides and a phosphor bronze spring separator (Type D). On first sight this appears to be painted.
- Some UNIQUE rules have decimal equivalent scales in Red rather than Black in the well of the rule - why and when are not known.
- Figure 1, Type L illustrates a basic Type C cross section which has been modified to have tongue and groove slots for the slide and also metal strengthening inserts in stock and slide. This may have been an experimental prototype, only one example has been seen, a "Legible" rule.
- Figure 1, Type M illustrates a Duplex rule which is almost certainly an experimental design. This is made up of two type D sections glued together and then "bridged" with some very crude aluminium straps. The duplex cursor is also made by gluing together two serrated plastic cursors at one end so that they can be sprung apart for removal.

Labels

The variety of labels on the back of the slide rules, and also information carried in the well of the stock may, with further investigation, give some clue to dating. There

are some common labels, the trig ratios found on the *Log-log* slide rules and the trig formulae on the back of the *Universal II* rules seem to have remained constants throughout the life of these rules.

Early rules appear to have had typewritten labels, these being replaced at some stage with printed equivalents. The title of the information on the label suggests timing of changes, i.e., early versions of the Trig ratios are titled "The Unique Slide Rule." This is also be found on "Universal" rules - which are assumed to be earlier than either "Universal I" or "Universal II" rules.

Commonly found labels are as follows:

- a Trig ratios - typed. Various titles, early: "The Unique Slide Rule."
- b Trig Ratios - printed. Titled (later) "Unique Slide Rule."
- c Decimal conversion, densities of metals, ultimate strength, properties of metals, permissible bearing pressures - typed.
- d as c, - printed. Titled "Unique Universal Slide Rule."
- e Resistivity and Temperature Coefficient.
- f Trig Formulae.
- g Trig Ratios - large printed version for "Brighton" rules.
- h Rates of Exchange, Material, Electrochemical equivalents, Atomic weights.
- j Mensuration, Conversion factors, English/Metric conversion, Atomic weights, General data, materials info.
- k English/Metric Conversion Factors.
- l Useful equivalents, Densities & Thermal properties of Metals, Densities of other materials.

Other Distinctive Differences

UNIQUE slide rules were produced with distinctive selections of scales as well as some unique scales. These made them very easy to use in some ways and a real pest in others. Some unusual differences are as follows:

- The UNIQUE *5/10* and *10/20* have double length scales in a simpler form to the multi scales described in Anderson's 1910 patent. This meant higher accuracy is possible within the limited slide rule length of 6" and 11" respectively.
- The *Dualistic* rules are unusual by having scales displaced by 10 rather than the more usual as used on the "Electrical" rule. This may be a hangover from the older style of displaced scales as originally proposed by Beghin in the late 19th. Century.

- Most UNIQUE slide rule types have two Log-log scales on the stock and are curiously marked LU - Log Upper, and LL - Log Lower, instead of the more usual LL1, LL2 etc. which they actually are. The UNIQUE *Dualistic* and *Brighton* rules have the normal three Log-log scales on the back of the slide labelled in the normal way, and are intended to be used by reversing the slide.
- UNIQUE were happy to experiment with unusual scale layouts, the *Junior* code J, is a prime example with a scale that is extremely odd, others such as the version marked "Rediffusion" are simple in the extremes with only one Decibel/Voltage conversion scale. The ease of changing scales on standard stock and slide material was obviously a feature UNIQUE tried to capitalise on.
- The considerable number of nonstandard rules in the list shows that UNIQUE would cheerfully produce a set of scales for almost any requirement that needed some form of calculation. The *Caterers and Confectioners* rule is a prime example of a rule for a limited and unusual market, but is a standard type D section rule that must have been available by the 100 yards, fitted with different scales.

Cases/Wallets

Most rules were supplied in some form of cardboard case, some being the pull-apart "tube" type, others, particularly 6" rules, came in a cardboard box - with and without hinged lids or "matchbox" styles. These cases are not particularly robust, and a number of examples exist where the previous owner has reinforced the case by various methods from the ubiquitous yards of various types of tape through to glass-fibre. In other examples, previous owners have either purchased alternative leather cases or made wooden or other protective cases. Some smaller rules are supplied with a see-through plastic wallet, some with a press stud cover, others a straight wallet. These seem to have been only available on later rules.

The last rules from Pattern 8 onwards are generally supplied in a plastic wallet that comes in at least two forms with different words - UNIQUE with a red dot over the i, which appears to have been the final pattern, and UNIQUE Slide Rule also with the red dotted i that is an earlier pattern. A wallet is shown in the 1965 advert.

Instruction Leaflets and Books

Early rules were supplied with the *Half-Hour Instruction Leaflet*, and later rules appear to have been supplied with a one page *Quick Instructions for Use*, the *Half-Hour Instructions* having to be purchased separately. When this change happened is not clear, but would appear to have been necessary as a result of supplying rules in the wallet. There is also a horizontal format *Half-Hour Instruction Leaflet* which appear to have been supplied with the last versions. The special rules, such as the

Dualistic, had special supplements available which could be purchased separately. The very specialist rules such as *Monetary* and *Caterers and Confectioners* had their instructions on the label at the back of the rule. At some stage the slide rules were supplied with a very simple typewritten set of instructions with no reference to Unique.

Early versions of the *Half-Hour Instruction Leaflet* have lists of the slide rules available, identify “new” rules, are dated, and have prices shown for the rules. These are valuable in identifying when rules were introduced, and for rough dating, as most UNIQUE slide rule cases have a price on them. This is either as a result of the UK Government legislation for Retail Price Maintenance, or UNIQUE’s own attempts to ensure that their rules were sold at the correct price - a subject covered in Snodgrass’s book as well! Sadly later versions have lists of the rules but none of the other information and so are of less use as an aid to dating.

There is also a small 8 page booklet titled *Introduction to the Slide Rule*. This predates decimal currency (1971), and was also published by the Unique Slide Rule Co. Ltd. Telescombe Cliffs, Sussex, England. It refers to “.. the UNIQUE range of over 20 models, includes well made slide rules at under 10/-.” and “Rules recommended for examples similar to those mentioned in this brochure: 10” Universal (U1) 10” Log-log (10L/L), 5” Pocket Rule (T4).”

Some UNIQUE catalogues also advertise *Teach Yourself the Slide Rule* with the Part Code TY as a particularly suitable book of instruction for the range of UNIQUE rules. This book was first published in 1955 and was updated often, the final paperback version being produced in 1972. Apart from the UNIQUE advert in the back of each book that is useful in identifying when some changes happened, the simple diagrams of the UNIQUE slide rules within the text give an indication of change dates.

The book *Working with a Slide Rule* by Willem Geerts first published in Holland in 1965 and later translated into English (1969), was sold with a UNIQUE *J180* 18cm slide rule. Versions of the book without slide rule were also available. It was assumed that this rule was specifically made for the book, however there is also a *J181* with different scales that is the same size.

The ABCD of Slide Rules by I.R. Keith M.A. of Brighton College, printed by the Kensington Press of Brighton, uses the *Study 500* with Black ends as the example slide rule throughout the booklet.

Summary

UNIQUE are an interesting, varied, and highly collectable slide rule. If all the permutations of variant are considered, the total possible numbers of different rules runs into hundreds. It is highly unlikely that all permutations are possible, so approximately 100 different rules would form a highly representative UNIQUE collection.

Acknowledgements

This article could not have been written without the considerable assistance of my two coauthors, fellow members Colin Barnes and John Knott, both of whom added considerably to the basic information also positively commenting on drafts of the article. Mrs. Elaine Snodgrass has also very kindly commented on the draft and added to the information on this delightful and interesting company. Her sister-in-law, Mrs. Vivienne Billenness, was kind enough to send me copies of an article written by Donald in 1948 for the Stationery Trade Review and a newspaper article from 1982 marking the Diamond Jubilee of Unique. While the dates in these two articles do not tally exactly, they enabled a more accurate historical perspective to be presented. The shame is that so much information has been lost, though much of the information on actual rules comes from a lucky coincidence when Colin was able to purchase many UNIQUE and other manufacturer’s rules when UNIQUE closed their doors. One can only wonder what would have happened if he had not been in touch with them at the “right” time.

UNIQUE Chronology

- c1886** Burns Snodgrass (BS) born. Scholarship student at the Royal College of Science, studied Engineering under Perry, Callender, Gilder Watson, Watts and Harrison. Whitworth Exhibition 1910.
- 1914-18** BS works in the Ministry of Munitions.
- 6.6.1919** Donald Claydon Snodgrass (DCS), his son, is born.
- 1919** Awarded MBE for his services to the War effort.
- c1921** BS produces some logarithmic scales by direct photographic means which are used by a friend at the London Central School for teaching.
- c1921** BS is a lecturer in Mechanical Engineering at Brighton Technical College.
- 31.8.22** Produced his first slide rule at his house at Moulscombe, Brighton. He sets up the Unique Slide Rule Company of Brighton for slide rule manufacture. The first slide rules used prints from machine divided copper plates. BS still works at the Brighton College, slide rule manufacture is part time.
- 19.10.23** First delivery of slide rules to Norton and Gregory. Slide rules sold via other wholesalers later.
- 1925** Manufacture of set squares also.
- c1925** Two Dial Calculator designs investigated but not marketed.
- c1928** Moved to Carden Avenue, Brighton. A small workshop added to the house with the intention of pursuing slide rule business more vigorously.

- 1929** Production of first Log-Log slide rule.
- 1930** Electricity laid on to the workshop as well as an electric motor for the mechanisation of some manual operations. Construction of slide rule altered.
- 1930** Introduction of adjustable and draughtsman scales.
- 1931** First Unique employee to keep up with demand.
- 3.2.31** Advertisement in the Bargain Column of the Daily Mail for slide rules at 12. This results in a considerable response, the development of Unique can be considered as starting from this date.
- 14.12.32** Vivienne Snodgrass, (VS) his daughter, is born.
- 1931-34** Increasing demand and an additional two employees taken on. Additional models of slide rules made.
- 1934** Slight slump in sales results in two employees leaving, BS continues manufacture with one employee and part time help from DCS during school holidays.
- 1935** Unique slide rules displayed on a wholesalers stand at the Scientific Instrument exhibition, South Kensington, a major breakthrough. Firms buying rules from Unique - Baird & Tatlock, W.H. Smith and Marine & Overseas (British Slide Rule Co).
- 31.12.36** BS resigns from Brighton Technical College to devote all his time to the business. Unique now employs five people. The first saw bench and other tools bought.
- 1936/7** New premises built on a plot of land at London Road, Old Patcham, Brighton, "near the Co-Operative stores".
- 1939-45** BS works in the Ministry of Supply, Unique continues with no major expansion.
- 1945** Output of side rules over 100,000 per year.
- 1946** DCS rejoins the company after 6 years war service in the RAF.
- 1947** VS starts work in the factory, working in the factory as well as the office.
- c1947** Extension to the Patcham factory.
- 1951** Unique becomes a Limited Company, The Unique Slide Rule Company Limited.
- 1954** Burns Snodgrass dies aged 68 from a heart attack. Donald Snodgrass takes over as M.D.
- 1955** *Teach Yourself the Slide Rule* (TYSR) published.
- 1956** Unique move to Buckhurst Road, Telescombe Cliffs, Brighton.
- 1958** VS ceases to work in Unique.
- 1964** Manufacture of "Flexicurve" started.
- 1967** Donald Snodgrass married Elaine in December 1967. In 1968 she started working as a machinist, assembler and assisted in the administration of the Company.
- c1970** DCS updates and "metricates" TYSR. Slide rule production reducing.
- 1975** Manufacture of slide rules stopped. DCS illness results in Mrs. E. Snodgrass' first stint as M.D.
- 1976** Name changed to Unique Instruments Limited.
- 1976/7** DCS returns as M.D.
- c1980** Ill health forces DCS's retirement as Managing Director, Mrs Elaine Snodgrass takes over as M.D. DCS continues as a Director of Unique.
- 1982** Unique employs 25 people.
- 22.5.93** Donald Claydon Snodgrass dies aged 73.
- 4.8.93** The Business was sold in two parts, premises to Cliff Plastics Products Ltd; the products, both Manufacturing and Sales to Walton Designs who manufactured at their own plant in Norfolk.

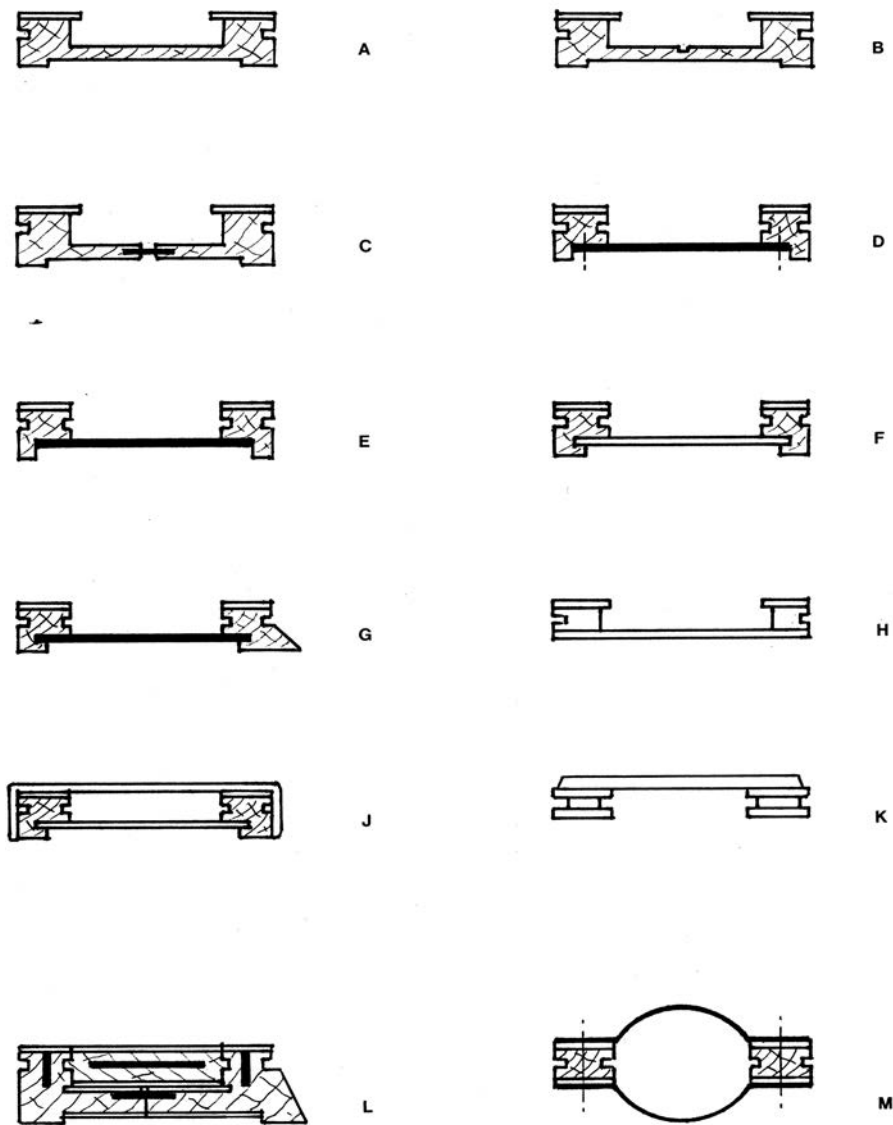


Figure 1: Cross Sections of Unique Slide Rules

Letter	Description
A	Wood/Celluloid, solid section
B	Wood/Celluloid, part sawn section
C	Wood/Celluloid, spring separator
D	Wood/Celluloid, phosphor-bronze spring, pinned through stock
E	Wood/Celluloid, phosphor-bronze spring, no obvious pins, may be glued or the pins may be hidden under the label
F	Wood/Celluloid or Wood/Plastic, plastic spring
G	Wood/Celluloid as E (no pins), with chamfer (Brighton double chamfer for (Dualistic) - not illustrated
H	All-plastic: J180/J181 type
J	Wood/Celluloid with plastic bridge
K	All-plastic: Study type
L	Wood/Celluloid with metal inserts
M	Wood/Celluloid Duplex with metal bridges – prototype

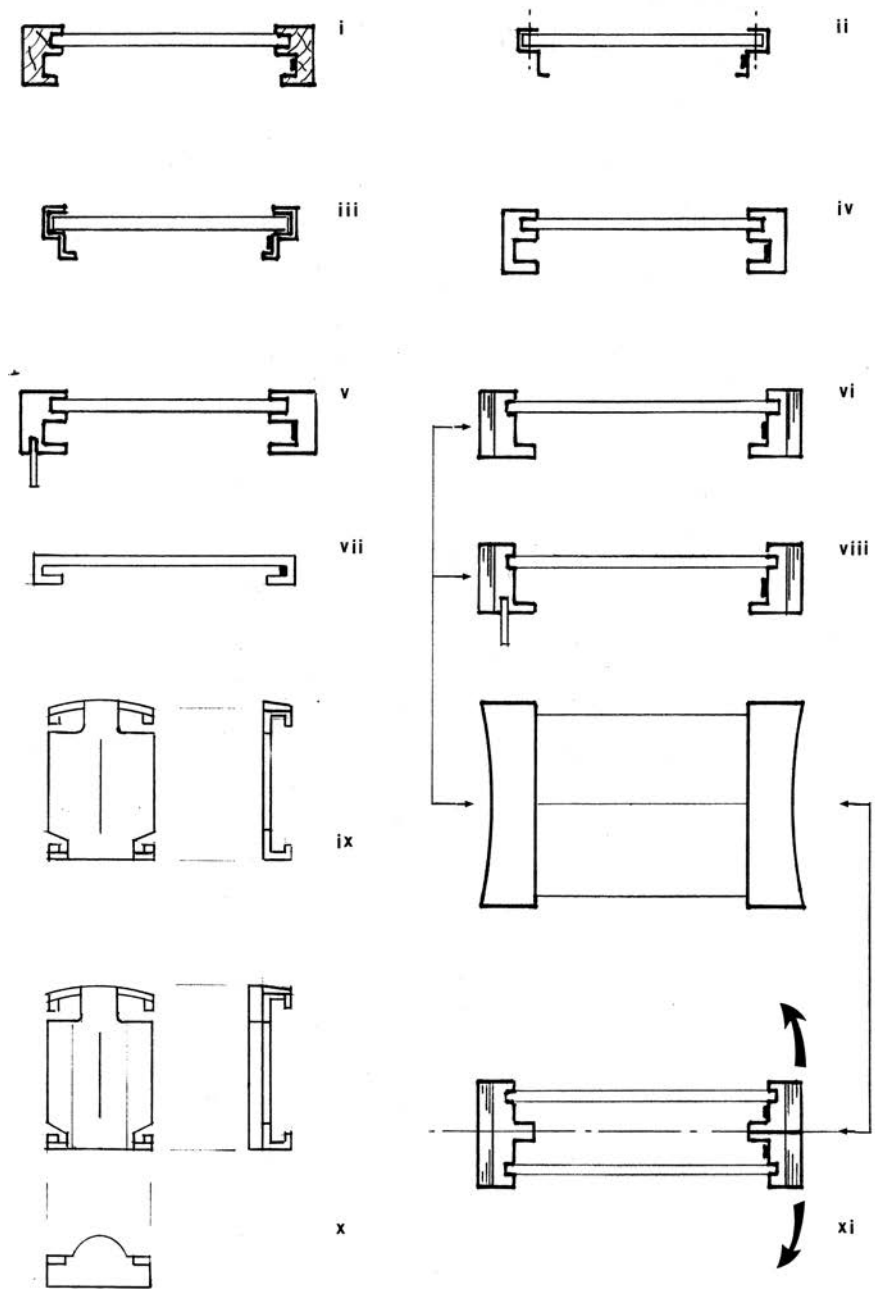


Figure 2: Cross sections of Cursors

Number	Description
i:	Wood/Celluloid.
ii:	Folded metal, pinned at one end.
iii:	Folded plastic, glued.
iv:	Solid plastic (Wide & Narrow).
v:	Solid plastic (L shaped).
vi:	Serrated plastic.
vii:	Moulded plastic (square).
viii:	Serrated plastic (L shaped).
ix:	Moulded plastic.
x:	Moulded plastic (magnifying).
xi:	Duplex - 2off type vi glued together at one end.

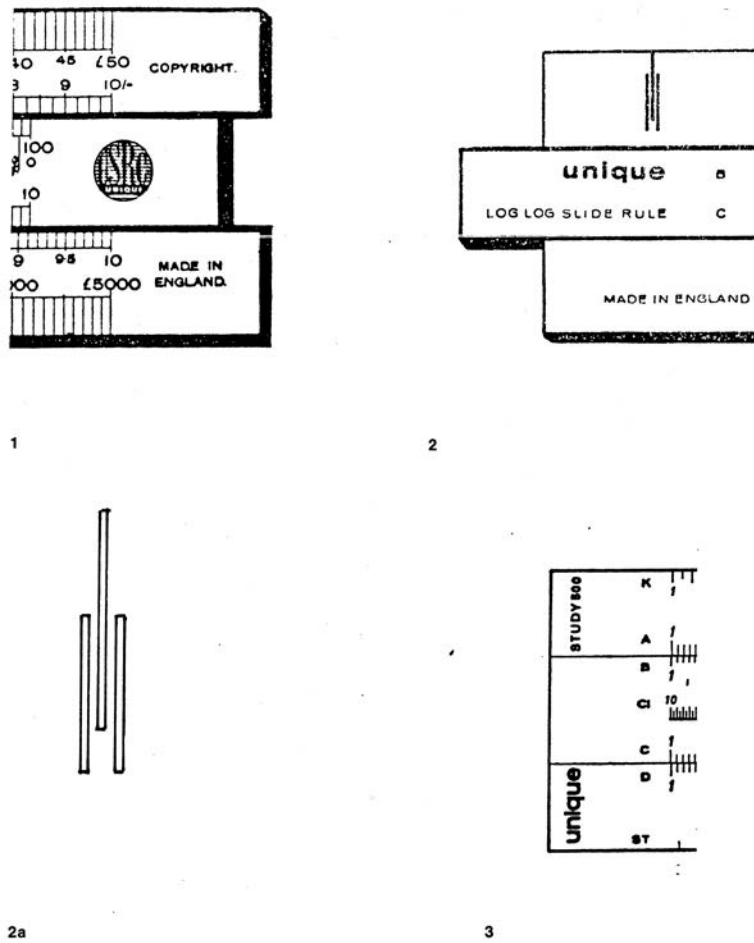


Figure 3: Logos

Number	Description
1:	USRC Logo.
2:	3 line logo – solid.
2a:	3 line logo – outline.
3:	Unique - study type.

Key to Table Titles

Type	This is the Type Name, usually found on the left hand end of the slide on the wood/cell slide rules, and on the top left of the stock on plastic.
Code	The Unique code number - sometimes on the rule, sometimes on the box/tube, or from catalogues etc.
Nom Size	The actual size of the rule, note that physically they are often considerably longer than the nominal scale length.
Pattern	See attached diagram, this includes various factors including stock section, chamfering etc.
Stock:	Section See diagram 1 which shows the common slide rule Cross sections. * is a modification to the section, i.e. double chamfered stock
	W/P Wood or Plastic slide rule
Scales:	C/P Celluloid or Plastic scales on wooden slide rules - N/A for plastic rules.
	G/N Celluloid scales are either Glued, or Glued and Nailed to the wood - N/A for plastic rules or plastic scales
Cursor:	Cursors can be either Wood, Metal, or Plastic. Plastic can be additionally Folded, Wide, Narrow, Serrated, or L shaped. See Fig 2 for diagrams.

Table of Characteristics, Part 1

No	Type.	Code	Nom. Size"	Pattern	Stock		Scales		Cursor Type	Comment.
					Sectn	W/P	C/P	G/N		
1	(Unmarked)		11x1¼	1		W				Manufactured in Moulscomb.
2	The "Unique" Slide Rule		11x1¼	2	A	W	C	N	i	A/B,C/D. Typed label. Scales early font?
3	The "Unique" Slide Rule		11x1¼	2	A?	W	C	N	??	A/B,C/D. Diff font (as later). Printed label
4	Universal		11½x1½	3	C	W	C	N	iii	LU,S,A/B,CI,C/D,T,LL
5	The Unique Universal I Slide Rule		10	3?						
6	Universal I	U1	11¾x1½	4,5,6,7	C&D	W	C	G&N	iv,vi	LU,S,A/B,CI,C/D,T,LL
7	Universal I	U1/2	6¾x1¼	6	D	W	C	G	??	LU,S,A/B,CI,C/D,T,LL
8	Universal I	U1/1	10(?)							Additional low reading log-log scale
9	Universal One	U1	12x1¾		F	W	C	G	vii	Plastic End Caps
10	Universal One	U1	12x1¾	7	E	W	C&P	G	vi	LU,S,A/B,CL,C/D,T,LL
11	Universal One	U1/1?	7x1¾	8&9	E	W	C	G	vi	
12	Universal II	U2	11¾x1¾	4,5,6,7	C&D	W	C	G&N	iv	LU,A/B,S,T,C/D,LL
13	Universal Two	U2	10							LU/A/B,S,T,C/D,LL
14	Universal Three		12x1¾		E	W	C	G	vi	
15	The Unique Log-log Slide Rule		11½x1¼	3	B	W	C	N	ii	small "Made in England", normal MiE. No CI
16	The Unique Log-log Slide Rule	5L/L	6x1¼	3	B&C	W	C	N	ii,iii	with CI scale, B = Technical Supply Co.
17	Log-log	10L/L	11½x1¼		C&D	W	C	N&G	iii,iv	Without CI scale
18	Log-log	10L/L(?)	10							With CI scale
19	Log-log	10L/L	12x1¾	8&9	E	W	C&P	G	vi	LU,A/B,C/D,LL - no CI scale.
20	Log-log	5L/L	6x1¼	5&6	C&D	W	C	N&G	iii	Without CI scale
21	Log-log	5L/L(?)	5							With CI scale
22	Log-log		6¾x1¼	8&9	E	W	C	G	vi	Without CI scale
23	Log-log	5L/L	6x1¼		D	P	C	G	iii	White Plastic with Celuloid scales! Experimental?
24	Log-log		7x1¾			P	n/a	n/a		
25	Legible Rule	10G	10		L	W	C	G	?	Stock & Slide with metal inserts, experimental?
26	Legible Rule	5G	5							
27	The Unique 10/20 Precision		10							
28	10/20 Precision	10/20	11¾x1¾		D	W	C	G	iv	D,s/s,s/s,A
29	The Unique 5/10 Precision		5			W	C	N		D,s/s,s/s,A
30	5/10 Precision	5/10	6x1¼	3&4	C	W	C	N	ii,iii	D,s/s,s/s,A

Table of Characteristics, Part 2

No	Type.	Code	Nom. Size"	Pattern	Stock		Scales		Cursor Type	Comment.
					Sectn	W/P	C/P	G/N		
31	Commercial	C	10		D&F	W	C	G	iv,vi	H,K,M/N,R,C/D,U,V
32	Electrical	E	11 $\frac{1}{4}$ x1 $\frac{1}{4}$	6&7	D	W	C	G&N	ii,vi	LU,F,DF/CF,C1,C/D,C,L
33	Navigational	N	10		E	W	C	G	vi	S1,A/B,S2,T2,C/D,T1
34	Dualistic	D1	5							
35	Dualistic	D2	5							
36	Dualistic	D3	11 $\frac{1}{2}$ x1 $\frac{1}{4}$		G	W	C	G	iv	also Pat 583,637
37	Dualistic	D4	11 $\frac{1}{2}$ x1 $\frac{1}{4}$	6&7	G*	W	C	G	iv,vi	P1/DF/CF,Q1,Q2,C/D,P2//LL1,2,3
38	Dualistic(?)	U3(?)	10							
39	Monetary	M	11 $\frac{1}{4}$ x1 $\frac{1}{2}$	7	D	W	C	G	iv,vi	M2,M1/B,C/D,M3
40	Brighton	B	11 $\frac{1}{2}$ x1 $\frac{1}{4}$	7	G	W	C	G	v(L)	K,A/B,C1,C/D,L,(1-x ² //LL1,2,3//S,T
41	Brighton	B	11 $\frac{1}{2}$ x1 $\frac{1}{4}$	7	G	W	C	G	viii(L)	as 40, painted white.
42	Thin pocket (as 5L/L)	T1	5			P	n/a	n/a		
43	Thin pocket (as 5/10)	T2	5			P	n/a	n/a		
44	Thin pocket (as 5/G)	T3	5			P	n/a	n/a		
45	Thin pocket (as U1/2)	T4	6 $\frac{1}{4}$ x1 $\frac{1}{2}$		H	P	n/a	n/a	vi	LU,S,A/B,C1,C/D,Y,LL
46	Thin pocket (as D2)	T5	5							
47	Study 500	S500	13x2	12	J	P	n/a	n/a	vii	K,A/B,C1,C/D,ST
48	Study 600	S600	13x2	12	K	P	n/a	n/a	vii	seven scales
49	Study 700	S700	13x2	12	K	P	n/a	n/a	vii	LU,S,A/B,C1,C/D,T,LL
50	Study 900 Reitz	S900	12 $\frac{1}{4}$ x2	12	H&K	P	n/a	n/a	vii	K,L,A/B,C1,C/D,S,T,ST. Study 900 in Red.
51	Darmstadt		10			P	n/a	n/a		
52	Chemical		10			P?				wood/cell?
53	Chemical	O	12x1 $\frac{1}{4}$		E	W	P	G	vi	LU,A/B,C1,Ch,C/D,LL. Atomic weights under slide
54	Legible	J180	8 $\frac{3}{4}$ x1 $\frac{1}{2}$	11	H	P	n/a	n/a	vi	Short version of S900. K,A/B,C1,C/D,S,T,STR
55	Junior	J181	8 $\frac{3}{4}$ x1 $\frac{1}{2}$	11	H	P	n/a	n/a	missing	A/B,C/D
56	Legible	J182	8 $\frac{3}{4}$ x1 $\frac{1}{2}$	11	H	P	n/a	n/a	vi	LU,S,B,C1,C/D,T,LL. Logo in Red
57	Junior	J	6 $\frac{1}{4}$ x1 $\frac{1}{4}$	10	F	W	P	G	None	Unusual folded scale, no cursor groove
58	Jiffy		4 $\frac{1}{4}$ x1	10	F	W	P	G	iii,ix,x	A/B,C1,C/D,K. Unique?
59	Florida	F	10 $\frac{1}{2}$ x1 $\frac{1}{4}$		D	W	C	G	iii	
60	Florida	F5	6x1 $\frac{1}{4}$		D	W	C	G	iii	
61	Area Calculator		6 $\frac{1}{2}$ x1 $\frac{1}{4}$		F	W	C	G	None	No cursor groove
62	Double H Slide Rule		13x1 $\frac{1}{2}$		M	W	C	G	xi	Aluminium ends. Duplex. Experimental?

