Suggestions for Dating pre-1920 Faber-Castell Slide Rules

Trevor Catlow

Introduction

As is well known, Faber-Castell began to date-stamp their slide rules in about 1920. Dating the rules they manufactured before that time can be problematical, especially as the practice of placing the model numbers on their rules did not begin until about 1910. Furthermore, unlike companies such as Pickett, Faber-Castell never placed serial numbers on their rules.

In this article I deal with the period between 1892, when A.W.Faber began to make slide rules [8], and the early 1920s when the date stamping of their rules began. A.W.Faber was primarily a drawing materials company, set up in 1761 and specialising in lead pencils. It traded from 1905 onwards as A.W.Faber-Castell; for convenience I will refer to the company name as Faber for the remainder of this article.

This article addresses some of the issues connected with the dating of early Faber slide rules. In writing this article I have two main aims. One is to help other collectors to ascertain the approximate age of their rules. The other is to encourage those of you who know more than I do, or who can add to or correct the details here presented, to come forward with information. This dating business is not an exact science! (Though with your help we can make it better. I can be contacted at catlow_jt@postmaster.co.uk).

I have used information from various sources, and made an estimate of correctness where sources conflict (as they often do) or are vague. Slide rules from my own collection each combine a number of features; these combinations sometimes suggest a dating sequence though not, of course, actual dates. Three particularly useful Faber documents I have used extensively are an instruction booklet (in German) dated 1901 [1], a catalogue with prices in US dollars, undated but produced around 1906 [2], and a catalogue (in German), again undated but produced around 1912 [3]. These documents have proved invaluable, but must be used with caution. For example, as recognised by students of other manufacturers' products, illustrations in catalogues do not necessarily represent the precise appearance of the most up-to-date models. Nor do they tell us the exact dates when a particular feature was introduced, only the fact that, at a certain time, the feature was in production.

For these and other reasons, the great majority of the dates in this article are approximate. The main exception to this is the dates when certain design features were registered or patented, though even here I am reliant on indirect sources for this information and these sources do not always agree. I must emphasise also that the date of introduction of some feature does not necessarily coincide with the date when that feature was patented or registered; implementation may follow the patent/registration date by several years, or even precede it.

The period under review was one when many developments in slide rule design took place, not least at the Faber company. Thus, the rules were changing regularly, which provides us with plenty of potential dating information. However, these changes are not necessarily consecutive; as several different models were produced, different models could display different features at the same time. Furthermore, certain features appeared as optional variations on a number of models, and there was variation between rules produced for different markets, for example Germany, the USA, and Britain. Also, some features such as cursors and boxes are so easily changed or replaced that they are of uncertain value as methods of establishing a chronology.

With these apologies out of the way, let us proceed to the details which can be used to provide dating information. This article is divided into the following sections:

Logos and Model Numbers
Country of Origin
DRGM and DRP numbers
Scales
Basic Method of Construction
Reverse side
Cursors and boxes

It concludes with a chronological summary of the features that are likely to be of most use in dating these rules, and an appendix describing Faber's suggested method for determining the position of the decimal point in simple multiplication and division.

Logos and Model Numbers

As noted earlier the company name was officially changed from A.W.Faber to A.W.Faber-Castell in 1905. However, this change was not reflected in the logo used on slide rules until about 1913 [8].

Initially, the logo "A.W.FABER." appeared on the lower front face of the main body of the rule (the stock). The lettering was fairly elaborate: the lines making up the letters were thick and were coloured gold. The letters carried serifs. After about 1900 the serifs disappeared, and soon after this gold lettering was replaced with letters consisting of thin black lines, in the sans serif style.

A Faber model number was a three-digit number beginning with 3. Prior to about 1910, model numbers were allocated but did not appear on the rules. Sources suggest that the earliest rule was the all-wooden model 350. Other models

were soon introduced, for example the 360 with some scales faced in celluloid [6], and in 1906 [2] eleven models are known. However, the 350 continued very much in its original form until about 1910; it is absent from [3] and I have not seen a rule with 350 printed on it. Starting in about 1910, rules carried a model number which preceded the logo and was separated from it by an asterisk. The complete logo thus appears as, for example, "360 * A.W.FABER." After about 1913 [8], the dot after FABER was dropped and the word CASTELL was appended: this latter word was printed in a sloping type face, enclosed in double quotation marks and further enclosed by the famous "lying towers", each set of towers inside a rectangle (Figure 1). After about 1920, the preferred location for the model number/logo information was in the well (the space in the stock which accommodates the slide), but for the model 378 this information was placed in the well during our time period.

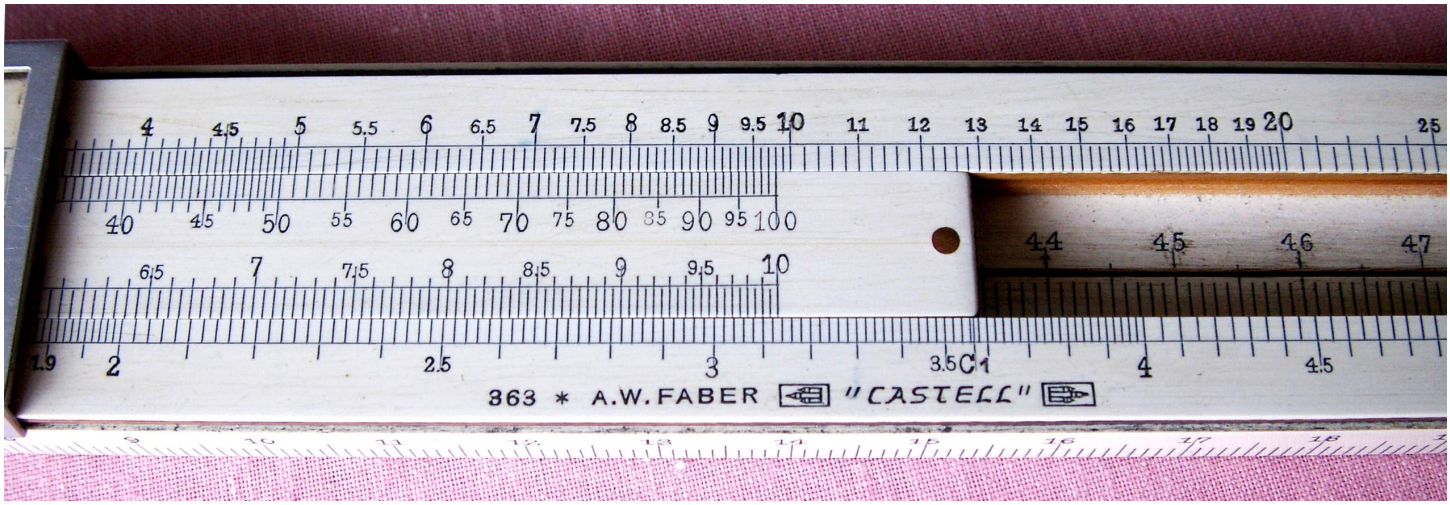

Figure 1. A typical Faber-Castell logo. Note also the centimetre scale in the well, and the peg at the end of the slide to help fix the celluloid in place.

BAVARIA, and MADE IN GERMANY) may relate more to the country where the rules were sold than to the age of the rule.

DRGM and DRP numbers

Many rules made after about 1898 bear one or more (usually no more than two) design registration numbers and/or patent numbers. These are known as DRGM (Deutsches Reichs Gebrauchsmuster, or German Reich Design Registration) numbers or DRP (Deutsches Reichs Patent, or German Reich Patent) numbers. They appear in various places on the stock. Some writers and sellers, especially it seems in the US, confuse these numbers with the serial numbers that they are accustomed to seeing on US-made rules. In this article I have taken the dates of registration and the descriptions of most of these design features from Dieter von Jezierski [6] [8].

Country of Origin

The Faber company was, and still is, based in the state of Bavaria in southern Germany. Most of the rules from our period in my collection were made for the British market and are marked "MADE IN BAVARIA.", following the logo and in the same style of lettering but of a smaller size (from about 1912, MADE IN BAVARIA appears some distance away from the logo). However, I have three rules made for the German market which bear no country of origin markings. Also I have or have seen several rules that were probably made for the US market that are marked "MADE IN GERMANY." This is the case in for example the illustrations in [2]. Thus I believe the statement sometimes seen that MADE IN GERMANY appeared until about 1900 when it was replaced with MADE IN BAVARIA is an over-simplification. I suggest that the three varieties I have seen (no country of origin, MADE IN

Scales

Most Faber models from this period are of the Mannheim design, with A, B, C, and D scales on the front face (although these are unlabelled) and sine, tangent and log scales (labelled "S.", "T.", and "L.") on the back of the slide. The top edge of the stock is angled and carries a scale of inches (for the British and US markets) or centimetres (for continental European markets), extending for most of the length of the rule. The bottom edge is square and carries a centimetre scale beginning at the extreme left-hand end of the rule and running to the extreme right-hand end. The well of these rules contains an extension of this centimetre scale. With the left-hand end of the stock aligned with the left end of the object to be measured, and the slide extended so that its right-hand end matches the right end of the object, the number in the well under the left-hand end of the slide gives the length of the object in centimetres where the object can be much longer

than the stock of the rule. Starting in about 1920 this extending scale in the well was gradually superseded when the logo was moved from the front face of the stock into the well (later of course the use of slide rules for measuring things became frowned upon!)

The font used for the digits on the scales was changed in about 1903. The new font is more modern-looking. A clear difference is apparent for example in the digit 1. In the old style this has a distinctive long, bold, and almost vertical down-stroke from the top of the number (see Figure 2). An-

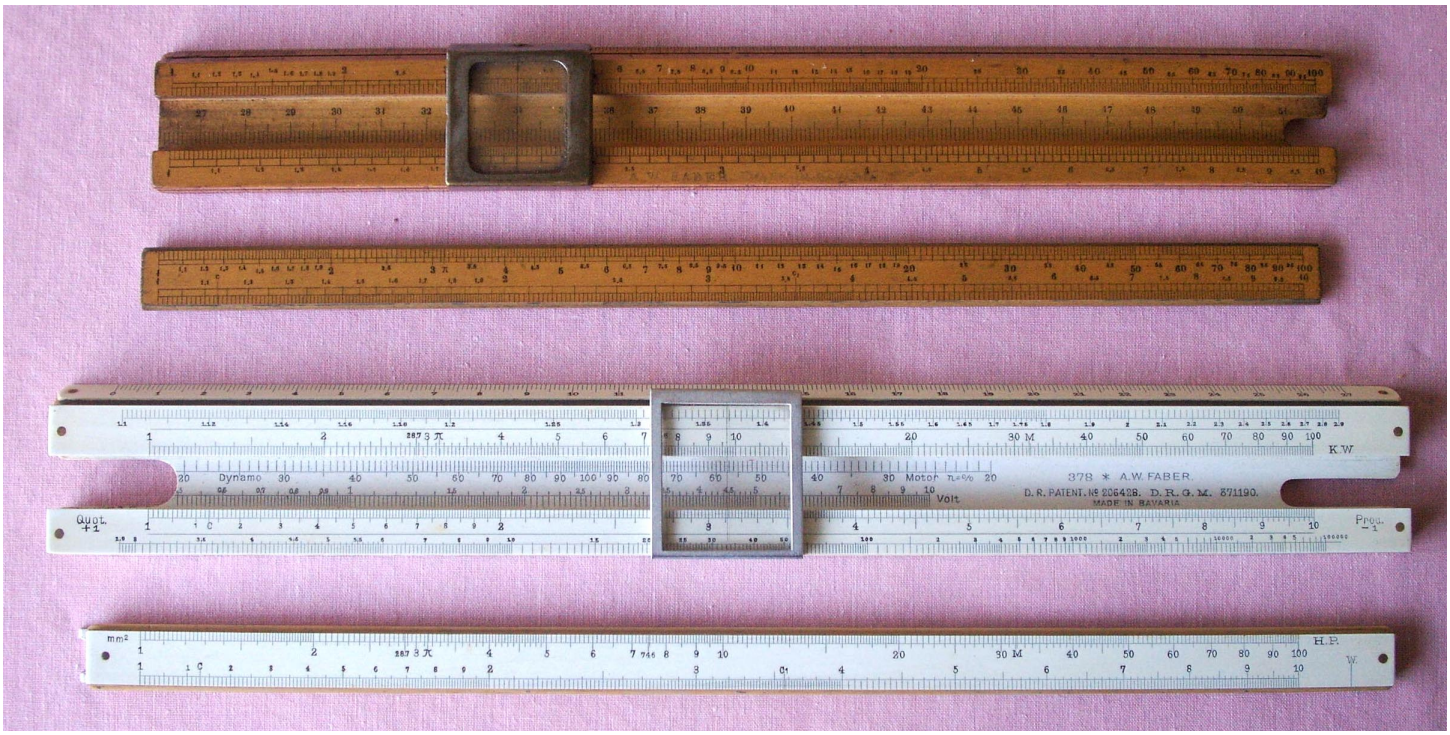

Figure 2. An old model 350 with a brass cursor, and a model 378 from around 1912.

other variation which has been noticed is a quirk in the numbers on the earliest model 350s; the number 1.5 on the A and B scales is not in alignment with the surrounding numbers. Ignoring specialist designs, there are two main exceptions to the basic Mannheim layout. The model 368 (which later became 378) has log log scales on the stock and other scales with electrical connotations in the well. The left-hand end of the slide has a curved metal end for reading the scales in the well. The model 361 is blank on the back of the slide and in the well (except for DRP or DRGM numbers) and has an angled lower edge to the stock which contains an inch scale running from right to left. Considering the Mannheim scales as the basic design though, there are four variations worthy of note.

In the first place, some models display more figures than others. Thus some mark the numbers between 1 and 2 on the C and D scales as 1.1, 1.2, 1.3 ... 1.9, whereas others reduce this to 1, 2, 3, ... 9. The latter variation also lacks numbers between 1 and 2 on the A and B scales and certain other intermediate digits. As shown in [2], these variations depend on the model numbers and not on the age of the rule.

The second place where variation is shown is in the number of gauge marks displayed. The documents in my possession do not refer to these but from the models I have seen I can suggest the following:

The mark π (3.1416) appears on the A and B scales on the earliest rules. The marks c (square root of $4/\pi = 1.1284$) and c1 (square root of $40/\pi = 3.5683$) appear on the C scale on the earliest rules I have seen, and on the D scale as well from about 1906.

The mark M ($100/\pi = 31.831$) appears on the B scale at about 1900 (it is described in [1], in a section described as a supplement or addendum, as a feature of new slide rules), and on the A scale also from about 1906. At first [1] the letter M appears with its left vertical stroke extended downwards in an elegant curve: later (around 1906) the M had adopted the regular form with serifs. Later still, examples appear with a smaller M without serifs: this style persisted into the 1920s and beyond and must be reckoned as the most recent style from our period.

The third area of difference is the information displayed beyond the ends of the scales. Early rules were 10.25 inches long and contain no such information other than “S.”, “L.” and “T.” on the reverse of the slide. Later rules may be longer (typically 11 inches) and carry various markings to assist in the determination of the decimal point in multiplication and

division. Sometimes these affect just the lower part of the stock, where the legends QUOTIENT +1 or QUOT +1 may appear to the left, and PRODUCT -1, PRODUKT -1, or PROD. -1 may appear to the right, of the D scale. At other times related markings also appear beyond the ends of the A scale on the stock (see Figure 3). Again, these seem to be a function of the model number rather than the age of the rule. The purpose of these markings is explained in the appendix.

The fourth interesting variation is in the use of "tramlines". These are lines that run the length of all the scales, and link up the "dangly" ends of the scale marks. Most Faber slide rules in our period carry double tramlines, but sometimes only single lines are provided. [2] explains that some models are supplied optionally without tramlines; this may have been a requirement of the US market at that time. If so, it was ahead of its time; Faber eventually dropped the tramlines

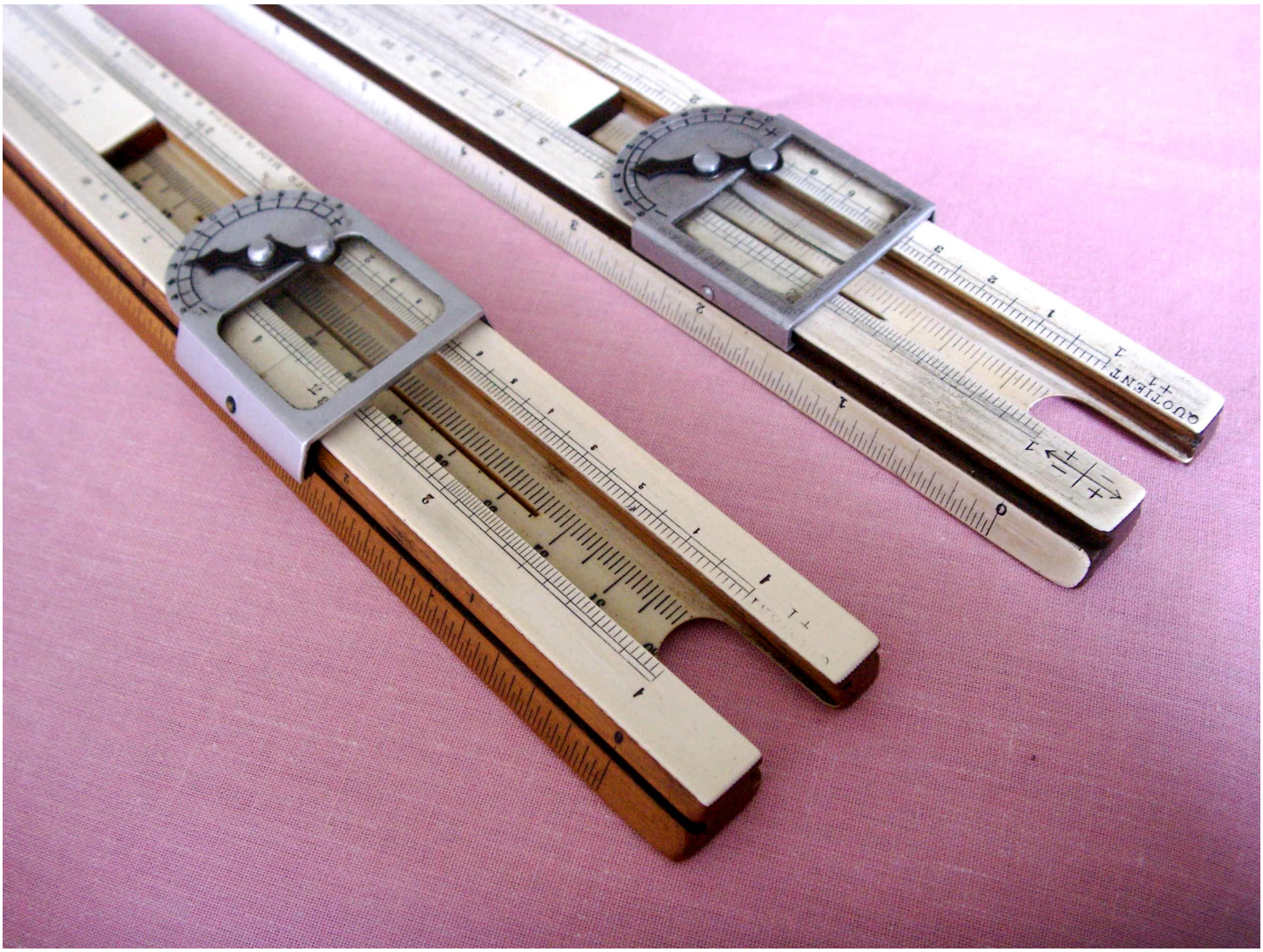

Figure 3. Old (left) and new (right) styles of digit-registering cursor and the altered grooves in the inch scale. Note the rounded (old) and squared (new) corners to the cursor glass. Note also the plastic on the new inch scale, different fonts for the digits, slits in the well, indents at the end of the well, and the aids to placing the decimal point on the end of the new rule (similar marks on the old rule have been almost rubbed away.)

from its rules in about 1960.

The model 368 mentioned above has variations of its own that are age-related. The 368 is not mentioned in [1]. The 1906 catalogue [2] shows a model 368 with two log-log scales on the top edge of the stock, which are read using an extension to the cursor. In [3] the model number has changed to 378, and the log-log scales have been moved to the top and bottom parts of the face of the stock. Faber's early log log scales are unusual in that they do not show the scales to base e, but to two other bases (top and bottom are different). Günter Kugel [5] discusses these scales. Faber did not appear to adopt the more normal e-based log log scales until about 1923.

Basic Method of Construction

In the period under review, Faber manufactured slide rules made of wood, in the so-called simplex style. In other words, the stock carried scales on one side only. As explained by Dieter von Jezierski [4] Faber did not start making duplex rules with scales on both sides of the stock until much later. Faber did, however, place scales on the reverse side of the slide at an early stage.

The normal length of Faber rules was 10.25 or 11 inches. Rules of 21 inches or 6 inches in length were also manufactured. [1] indicates that 21-inch rules were introduced just prior to 1901, and as 6-inch rules are mentioned in [2] but not [1] they must have been introduced somewhere around 1903.

As described in [2] and [3] the wood normally used was boxwood, although mahogany was used for the longer rules. However, a customer could request that a shorter rule be supplied in mahogany. Other woods were introduced, but presumably not until after the 1912 catalogue was printed.

At first, the user was expected to remove the slide and flip it over in order to utilise the scales on its reverse. In time, however, indentations were made, first in the right-hand end and later in both ends of the well of the stock, so that some or all of the reverse-side scales on the slide could be read with the slide in its normal position. The right-hand indentation is positioned so as to enable the S and L scales to be read, whereas the left-hand indentation is positioned for the S and T scales. [1] contains illustrations with an indentation in the right-hand end and, in the supplement, one in the left-hand end, too. I deduce that rules with an indentation in just the right-hand end pre-date 1901 by several years, and those in both ends were produced from about 1900 onwards. I have seen a very early model 350 illustrated [9] which has no indentations and no scales on the reverse of the slide. Rules with only the right-hand indentation in the well contain the S, L, and T markings on the slide at that end only: those with indentations at both ends also have S, L, and T marked at both ends.

A supreme consideration of all slide rule manufacturers was to minimise the adverse effects of time and usage on the accuracy and usability of the rules. The slide had to move easily, but not too easily, and the scales had to retain their integrity. Faber introduced various improvements to their rules during our period. To my knowledge these include the following:

• A pair of boxwood springs was placed inside the upper edge of the well of some models, bearing on the edge of the slide (described in [2]). This feature, covered by DRGM number 98350 [6], aimed at maintaining the correct level of friction between the slide and the stock. DRGM 98350 is dated 1898. I have seen rules with these springs and bearing the DRGM 98350 indication, but also at least two rules with the boxwood springs that do not carry that indication. I have seen these springs in two locations: sometimes in the groove itself, where the "tongue" of the slide runs, and sometimes behind that, between the groove and the base of the well.

• Two end-to-end longitudinal slits, each about 8 or 8.5 cm. long, were cut along the well of the stock (through both the wood and the plastic) on some models, designed to reduce stresses in the stock as the wood aged. These are described in [2] but although I cannot say for certain when they were introduced I suggest they may date from about the same time as the boxwood springs. The slits are more common than the boxwood springs mentioned above. I have seen rules with both features, and others with just the slits, and another with just the springs.

• At some stage the longitudinal slits were changed to a single cut running the whole length of the stock, dividing it into two parts. The two parts were joined fairly rigidly with a plastic strip forming the floor of the well and running the length of the rule (covered by DRGM 306107, dated 1907). Even after the introduction of this feature, certain rules still carried boxwood springs.

• The stock was made in two halves as above, joined by spring steel plates fixed into the well. These provided a degree of flexibility, more so than the plastic strip mentioned above, and exerted a gentle pressure on the slide which could be varied by the user. This feature, covered by DRGM 522689 in 1912, does not appear to have been implemented until about 1913: it is not mentioned in [3]. It proved effective and was retained in all subsequent Faber wooden rules. I believe that the boxwood springs were discontinued before or at the time of the introduction of this feature.

• Longitudinal brass strips were inserted into the stock and the slide, easily visible from the ends of the rule, to stiffen the wooden components. This feature, covered by DRP 206428 in 1907 and introduced soon after in most if not all rules, proved effective and was retained in all subsequent Faber wooden rules. The DRP 206428 designation appears on countless Faber rules and boxes (see Figure 5) and so can be reckoned as one of Faber's main design features.

Early Faber rules were made entirely of boxwood. The scales were printed directly onto the wood, in black. The 1906 catalogue [2] describes such a rule: it is the model 350. All other models in that catalogue are shown with scales printed on celluloid facings (celluloid being the first synthetic plastic material, invented in the U.S. by John Wesley Hyatt in 1869). We know that Faber began to use celluloid facings in about 1895 [6], but their introduction was gradual. Faber does not appear to have obtained any patent for celluloid scales; another German manufacturer, Dennert and Pape, obtained such a patent (DRP 34583) in 1886, but this did not prevent widespread adoption of the technique by other makers. Perhaps the patent was poorly drafted.

Faber's first use of celluloid had the material on the slide (both sides), the front face of the stock, and in the well. The measuring scales, of centimetres and/or inches, were left in plain wood. I assume that the reason for this difference concerned the sliding of the cursor: the stocks of early Faber rules had grooves for the cursor which roughly bisected the measuring scales: the numbers on the scales were positioned to the front of the grooves and the graduation

marks were positioned to the rear. Therefore, if implemented in celluloid each of these scales would require two pieces of celluloid.

It would appear that, somewhere between 1901 and 1906, a re-tooling took place on all models except the 350. The cursor grooves in the stock were moved to the front part of the edges, allowing the flanges of the cursor to be reduced in size. This change also permitted the measuring scales to be represented on a single piece of celluloid, so that from this time onward all scales (except on the model 350) were faced with celluloid. See Figure 3.

The 1906 catalogue [2] mentions an improved method of fixing the celluloid scales to avoid warping etc., but it does not explain the method. All but one of the illustrations in that catalogue show plain celluloid faces. The exception is the model 361, where the illustration clearly shows pegs securing the ends of the celluloid strips. This model is described as being "recently introduced". I deduce that the use of pegs to secure the celluloid is the "improved method" mentioned in [2], that it began in about 1906, and that the catalogue in my possession has illustrations that had not been updated to show the pegs on older models. So it seems clear that Faber began to use pegs to secure the celluloid strips from about 1906, although DRGM 371190 describing the use of wooden pegs to secure laminated celluloid is dated 1908.

Faber stopped using the fixing pegs in about 1940, presumably following advances in the performance of adhesives.

[2] also stresses that the information on the celluloid facings (but not on the all-wooden rules) is "now SCORED or INCISED" into the surface. The word "now" suggests that this is a new feature, so that earlier rules with celluloid facings are not "scored or incised", i.e. the information is simply printed on the surface as is the case with the rules without celluloid facings. [2] also mentions that the information scored into the celluloid is marked in blue, but I am not yet aware of any rules so marked: black is the normal colour.

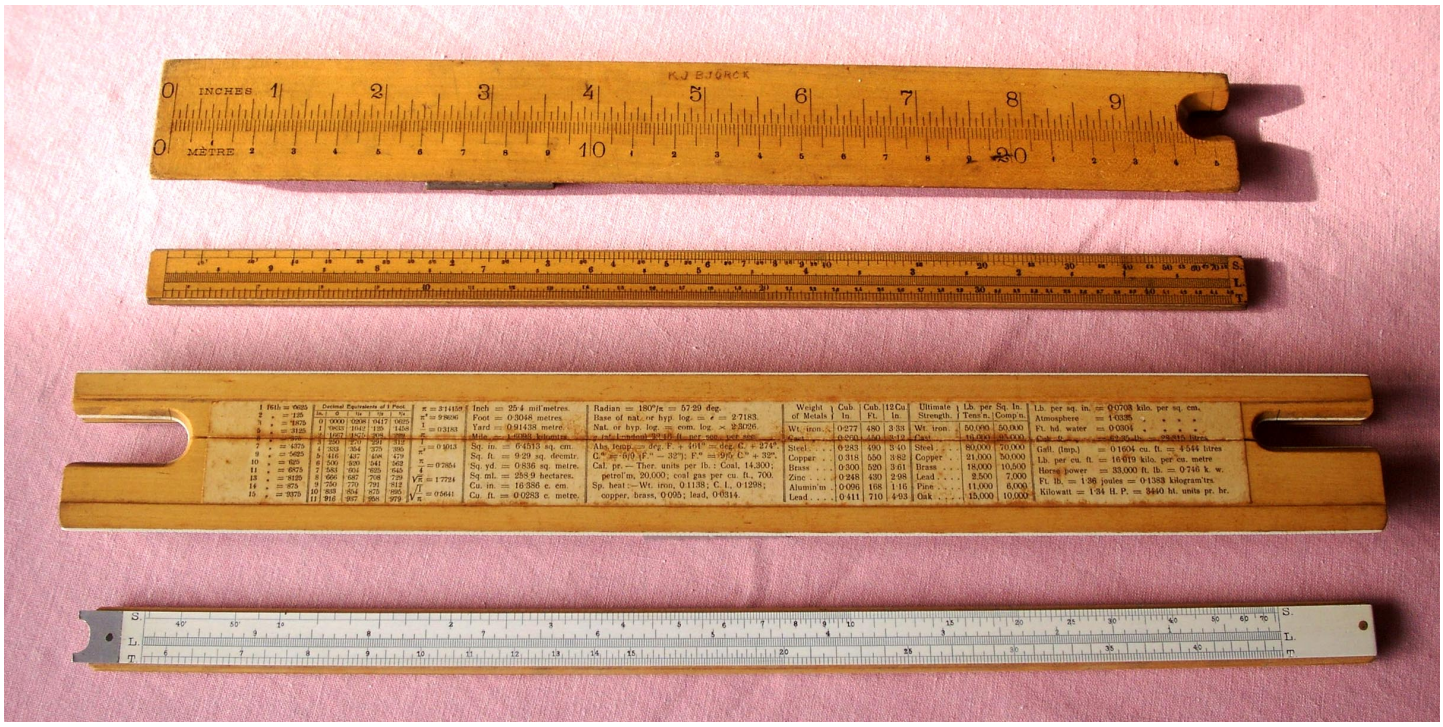

Figure 4. The reverse sides of the models shown in figure 2.

Reverse Side

As explained previously, Faber rules from this period had no logarithmic scales on the reverse of the stock. In fact, on some rules (for example is the model 361) the back of the stock was blank. Usually, however, some material was presented on the back.

[1] shows several pictures where the reverse of the stock carries an analogue scale allowing conversion between inches and centimetres. This was printed directly onto the wood, and may have been normal up to that time ([9] also illustrates this feature on its oldest rule). However, illustrations from the supplement in [1], presumably relating to the most recent products, show a table, printed on paper, of numerical values on the back in place of the conversion scale. It seems fair to assume that the change from conversion scale to numerical tables took place around that time (1901). The table of numerical values is a feature of almost all rules

from our period, and the language used (German, English, etc.) is an indication of the country where the rule was marketed.

Cursors and boxes

As I stated above, cursors and boxes do not provide positive dating information for slide rules as they can become mismatched and misleading [6]. Catalogues advertise spares such as cursors, cursor springs, cursor glasses, as well as boxes. Non-Faber cursors are not uncommon. However, in my experience original cursors and boxes are found most of the time and so can provide useful confirmation of other evidence.

Most Faber cursors in this period were of aluminium and glass construction, with a single hairline and a spring at the top held in place by a central pin. Until about 1903, the frame for the cursor glass had rounded corners: after this date the corners were square (see Figure 3). None of the Faber cursors I have seen on slide rules up to 1920 have any indication of manufacturer's name or country of origin: such information began to appear on some Faber-Castell cursors in about 1927.

One early cursor in my possession is of an interesting design. The frame is made of brass. At the right-hand edge of the frame are two tiny screws which press against the edge of the glass: one near the top, the other near the bottom. At the other edge there is a small bump in the frame, about half-way down, and the glass can rotate about this bump in a fashion similar to a child's seesaw. Apparently, by adjusting the screws the glass can be rotated and fixed so that the hairline is exactly vertical in the cursor. However [6], this type of cursor was phased out quickly because users tended to play with the screws unnecessarily and so the glass became damaged.

Another interesting early cursor is illustrated in [9]. This has a piece of glass with a hairline in a (brass?) frame. The frame carries chisel-like projections to the right and left, similar in principle to the earliest cursor designs which had no glass at all, just chisel-like projections. I take this cursor, and its accompanying rule, to be one of Faber's earliest.

The most dramatic variation in Faber cursor design in the pre-1920 period was the digit-registering cursor (see figure 3). This incorporated a prominent semi-circular scale running from -6 to +6, and a corresponding pointer that could be set by hand. The mode of use of this cursor is explained in the appendix. This cursor was provided with the model 367 and its 21 inch equivalent the model 380, and is covered by DRGM 116832 [6] dating from 1899. The supplement to [1] describes this cursor as a feature of the newest slide rules, so its introduction in around 1900 is well ascribed. [3] still shows the model 367, and another model the 377 with this cursor, but the 380 is no longer mentioned as having this cursor. I do not know when this type of cursor was discontinued, but I have a Faber document from around 1937 describing and illustrating the model 1/67/367, still with the digit-registering cursor. This information tallies with Clay Castleberry's article [7].

Figure 5. Old-style (top), and new-style (bottom) boxes. Top and bottom faces are shown for the new box. Note the DRP 206428 announcement.

All the boxes I have seen from the period under review are made from black card, though replacement boxes made from leather are advertised. There are two main designs (see Figure 5). Early boxes had square corners and edges, with a logo consisting of the words A.W.FABER's in the form of an arch above the words CALCULATING RULE (Faber documents, boxes, advertising material etc. in English almost always refer to "calculating rules" until about 1950 when the term "slide rule" was introduced more generally). Later boxes had rounded corners and edges and a logo consisting of the words A.W.FABER with a final dot (period). These rounded boxes often carry the message "D.R.P. No. 206428" and have paper labels on the reverse side, carrying advertising material for various Faber products. Both types of box are often found in a damaged state. When damaged, the rounded variety can be seen to have thin metal protectors at both ends which were originally covered by black material. A few of my boxes carry the model number of the rule at the end of the lid part of the box, but due to damage to earlier boxes, and lack of other evidence, I am unable to say when the model number began to appear on boxes.

Key Features in Chronological Sequence

•1892 First Faber slide rules made of boxwood (model 350).
Logo "A.W.FABER." printed in gold using a serif style of lettering.
Information printed on the surface, not incised.
Inch/centimetre conversion scale on back of stock.
Brass-framed cursor: cursor glass corners rounded.
Gauge marks π (on A and B), and c and c1 (on C)
•~1893 S, L, and T scales on rear of slide
Indentation in right-hand end of well, to read S and L

scales from below
•~1894 Aluminium-framed cursor introduced
•~1895 Began to add celluloid facings to slides and (partially) stocks (model 360)
• 1898 DRGM 98350: boxwood springs for improving the grip on the slide
•~1898 Two end-to-end slits cut into floor of well on some models
• 1899 DRGM 116832: digit-registering cursor
•~1900 21-inch rule introduced (model 380?) in mahogany
Digit-registering cursor introduced (model 367)
Boxwood springs introduced on some models
Gauge mark M introduced on B scale, with curved left vertical
Indentation in left-hand end of well, to read S and T scales from below
Back of rule covered with a paper sheet containing numerical tables
Lettering in logo and country of origin no longer has serifs
•~1902 Information on celluloid facings became incised, not smooth
Gold logo and country of origin became black
•~1903 Re-tooling to alter the position of cursor grooves
Celluloid used on all scales of all models except 350
Cursor glass corners became square
More modern font used for the digits on the scales
•~1906 M gauge mark became a normal letter with serifs, on A and B scales
c and c1 gauge marks added to D scale
Wooden pegs introduced to secure the celluloid facings
• 1907 DRP 206428: metal strips to strengthen the stock and slide
DRGM 306107: two-part stock connected with a celluloid strip glued between layers in the floor of the stock
• 1908 DRGM 371190: celluloid facings secured with wooden pegs
•~1910 Model numbers (3xx) began to appear on slide rules
Metal strips inserted the length of the stock and slide
End-to-end slits phased out
•~1911 Boxwood springs phased out
•~1913 Two-part stock connected with steel springs (DRGM 522689: 1912)
The Faber-Castell logo was introduced on slide rules
•~1920 Single-digit year number and month number incised on rear of stock

Appendix

[1] includes instructions for using the digit-registering cursor to determine the position of the decimal point in multiplication and division. I summarise these instructions here.

The basis of the procedure uses N, the number of digits before the decimal point of each operand. So for the numbers 17, 17.5, 0.25, 0.0025, N is 2, 2, 0, and -2 respectively. When performing a multiplication on a slide rule using the C and D scales, two possibilities exist. For example, when multiplying 2 by 4, the slide protrudes to the right, and when multiplying 5 by 6, the slide protrudes to the left. In the first case (slide to the right), N for the answer is the sum of the N values for the two multiplicands, less 1. The marking "PRODUCT -1" or similar to the right of the D scale is a reminder of this rule. In the second case (slide to the left), N for the answer is simply the sum of the N values for the two multiplicands. Similar rules apply to division: the marking "QUOTIENT +1" or similar to the left of the D scale is a reminder of the rule that applies for division. Try it and see! Using the digit-registering cursor to assist you, set the pointer to 0 before you commence a series of multiplications and/or divisions on the C and D scales, and increment or decrement the pointer at each stage according to the values of N for each operand and the -1 and +1 rules depending on the position of the slide.

Did you spot the problem with this method? If you multiply, say, 2 and 5 with the slide to the right, the answer is 10, but the procedure wrongly tells us that N for the answer is 1+1-1=1. The same problem occurs with any multiplication which can be carried out with the slide to the right and where the answer 10. I have not seen this problem described in any literature: perhaps it explains the eventual demise of the digit-registering cursor.

The corresponding procedure when using the A and B scales is more complicated. I will not describe it here. Suffice it to say that the quadrant markings to the left and right of the A scale on some Faber rules (mainly if not exclusively the model 367 and its variants) provide an aide memoire for the method.

Acknowledgement

I owe an enormous "thank you" to Dieter von Jezierski, who while I was writing this article supplied me with copies of many interesting documents (including [2] and [3]) and answered a never-ending stream of questions in a friendly and encouraging fashion. If, despite Dieter's help, errors remain in this article the fault is entirely mine.

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Trevor Catlow is a retired computer software specialist living in Southeast England. He bought his first slide rule, an Aristo Scholar, to use at school, and his second one about three years ago. Since then his collection has grown to about 80 rules, but he still has the Scholar.