THE JOINT EXAMINATION BOARD

PAPER P6

INFRINGEMENT AND VALIDITY OF UNITED KINGDOM PATENTS

Tuesday 1st November 2011

10.00 a.m. – 3.00 p.m.

Please read the following instructions carefully. ***Time Allowed – 5 HOURS***

1. You should respond to the instructions given at the end of the Client's letter.

2. Please note the following:

    a. Enter the Paper Number (P6) and your Examination number in the appropriate boxes at the top of each sheet of paper.
    b. The scripts are photocopied for marking purposes. Please write with a **dark inked pen** on one side of the paper only and within the printed margins, and do not use highlighters in your answer.
    c. Do not state your name anywhere in the answers.
    d. Write clearly, as examiners cannot award marks to scripts that cannot be read.
    e. **Marks are awarded for the reasoning displayed and the points selected for discussion rather than the conclusions reached.**
    f. You must number all the pages of your answer script. Once the exam finishes, an additional 5 minutes will be allowed for you to do this.

3. Under the Examination Regulations **you may be disqualified from the examination and have other disciplinary measures taken against you if**:

    a. You are found with unauthorised printed matter or other unauthorised material in the examination room.
    b. Your mobile phone is found to be switched on.
    c. You copy the work of another candidate, use an electronic aid, or communicate with another candidate or with anyone outside the examination.
    d. You continue to write after being told to stop writing by the invigilator(s). **NO WRITING OF ANY KIND IS PERMITTED AFTER THE TIME ALLOTTED TO THIS PAPER HAS EXPIRED.**

4. **At the end of the examination assemble your answer sheets in question number order, number all the pages and put them in the WHITE envelope provided**. Ensure that the answer sheets placed in the envelope are not stapled or joined together in any way. Any answer script taken out of the examination room will not be marked.

Document checklist:

Client's letter	(1 page)
Document A (extract of client's patent application)	(3 pages)
Document B (cited in search report)	(4 pages)
Document C (cited in search report)	(1 page)

This paper consists of 10 pages in total, including this page.

Client's Letter

You receive the following letter from a new client:

"Dear Patent Attorney,

I would like your assistance concerning my UK patent application GB0912345.6. Due to lack of funds I filed this application myself. I now have someone interested in making and selling my device in the UK, exactly as illustrated in my patent specification. I would therefore like you to take over prosecution of my application.

I have recently received a search report from the UK Intellectual Property Office. I think this is good news, as the two documents cited (a UK patent and an undated Wiki article) are listed as "category A" – indicative of technological background only. However, I want you to take a close look at the search results, just in case there are further issues that I have not appreciated.

Please can we arrange a meeting at which to discuss my application and where I go from here.

I look forward to your advice.

Yours sincerely,

Brian Stawm

Professor Brian Stawm
Department of Metrology
University of Borsetshire"

Relevant extracts from the specification of GB0912345.6 are attached as Document A. The application was filed on 12th June 2009 and was published in December 2010. It remains pending, awaiting issuance of the first substantive examination report. Copies of the documents cited in the official search report, identified as documents B and C, are also provided. Document B is the patent specification as granted ("B" publication). It is in force, and stands in the name of MegaLabs, Inc., a multinational manufacturer of scientific equipment. A quick check on the internet suggests that the calliper illustrated in the patent is one of MegaLabs's best selling products.

Your task is to prepare detailed notes for the proposed meeting. These should be **confined to infringement and validity matters arising from the cited documents**, and any ancillary points of advice. Your answer should include an indication of further information (if any) that may be required to complete your infringement and validity investigations. You should not however advise on the continuing prosecution of the client's application GB0912345.6, or more general issues such as ownership of the invention or protection of the invention outside the UK.

Document A – Patent application GB0912345.6 filed 12th June 2009 in the
Brian Stawm, without claim to priority.

Measuring Calliper

My invention concerns an instrument for measuring size dimensions such as the external diameter of a part. More particularly it relates to measuring callipers including a measurement indicating scale that may be accurately read by eye.

A known form of measuring calliper has a linear scale having a fixed jaw and a carriage slidable along the scale and carrying a moving jaw. The distance between inside edges of the jaws is indicated by an index mark on the carriage that can be read off against the subdivisions of the linear scale. The calliper can therefore be used to measure outside dimensions of parts placed between the jaws. Measurement accuracy partly depends on the fineness of the subdivisions on the linear scale. However it is difficult to make scales having subdivisions less than 0.5 mm. Scales finer than this look “cluttered” and are difficult to read. Generally therefore, Metric scales have 1 mm subdivisions. Measurements accurate to less than 1 mm can still be obtained using such a scale by estimating by eye the fractional distance that the index mark lies between the nearest subdivisions to either side, e.g. if the index mark lies beyond the 11th millimetre marking on the linear scale, three quarters of the way towards the 12th millimetre marking, the measured dimension is approximately 11.75 mm (11.8 mm to 1 decimal place). However estimating fractional distances in this way requires skill, good eyesight or reading glasses, and is prone to error.

My invention exploits the phenomenon of parallax to take some of the guesswork out of the fractional distance estimation. Parallax is normally a problem which impedes measurement accuracy in instruments of the kind in which a pointer moves in front of a graduated scale and the user views the instrument from in front of both the pointer and scale. The apparent measurement will differ depending on the angle from which the user views the scale. A true measurement is only obtained where the user views the pointer from directly in front, i.e. with their line of sight normal to the plane of the scale and the pointer in the centre of their field of view.

In accordance with my invention, a measuring calliper is provided in which a pointer and a secondary scale are both movable in front of a main scale, the secondary scale being in front of the pointer. Conveniently, the pointer may be an index mark embedded in a block of transparent material such as clear plastic. A lower face of the block slides against the main scale and the secondary scale is marked out on an upper face of the block. To take a reading, the user views the pointer and main scale through the secondary scale, adjus the angle of viewing until the pointer is aligned with the nearest subdivision marking on the main scale. In this position the user then notes the subdivision marking on the secondary scale which lies closest to the pointer. This marking indicates the fractional distance that the pointer lies between the nearest markings on the main scale.

Figure 1 shows a preferred embodiment of my measuring calliper.

Figure 2 is an enlarged view of the carriage and plastic block, from directly in front.

Figure 3 is an enlarged view corresponding to Figure 2, but from an angle for taking a measurement.

Figure 4 is a diagrammatic side view showing two different lines of sight, corresponding to Figures 2 and 3, illustrating the principle of operation of the calliper scales.

As shown in Figures 1 and 2, the calliper 10 has a linear main scale 12 with subdivisions 14 marked out along a main body 16. This body is also provided with a fixed measuring jaw 18. A carriage 20 has a through-going slot in which the main body 16 is slidingly received. The carriage has a jaw 22 mounted on it for adjustable co-operation with the fixed jaw. The carriage also comprises the transparent plastic block 24 incorporating the pointer in the form of an embedded index mark 26 positioned slightly above the main scale 12. The secondary scale 28 is formed by evenly spaced subdivision markings 30 on the upper face of the block 24.

Referring to Figure 2, in the example jaw spacing illustrated, the index mark 26 happens to lie between two subdivision markings 14a, 14b of the main scale 12, when viewed directly from the front, i.e. along line of sight 31 in Figure 4. Because the embedded index mark 26 lies above the main scale 12, its apparent position against the main scale will change depending on the angle from which it is viewed. It is therefore possible to adjust the viewing angle until the index mark 26 appears to lie directly over the previously “closest” main scale subdivision marking 14b. This viewing configuration is shown in Figure 3 and corresponds to line of sight 32 in Figure 4.

The apparent position of the index mark 26 against the secondary scale 28 will also change with viewing angle. Because the index mark 26 lies closer to the main scale 12 than to the secondary scale 28, this change is greater than the apparent change in the position of the index mark against the main scale 12. The subdivision markings 30 on the secondary scale

28 can be placed at equal intervals which indicate equal fractions of the interval between adjacent markings 14 on the main scale 12. For example, for a Metric instrument, the main scale 12 can be marked out in mm and the secondary scale 28 intervals can indicate tenths of a millimetre, without the secondary scale becoming too cluttered for easy reading.

The line of sight 32 corresponding to the viewing angle of Figure 3 is shown in Figure 4 to pass through the aligned main scale marking 14b, the index mark 26 and the secondary scale 28. It can be seen that this line 32 passes through the secondary scale closest to the third subdivision marking 34 counting away from the secondary scale zero marking. The index mark 26 therefore likewise appears closest to the third secondary scale subdivision mark 34 in the "user's eye view" of Figure 3. As the index mark 26 lies closest to the 42 mm marking on the main scale 12, in the above example the indicated measurement is 42.3 mm to one decimal place (= 42 + (3 x 0.1) mm). Positive magnitudes on the secondary scale are added to the reading on the main scale, whereas negative magnitudes are subtracted.

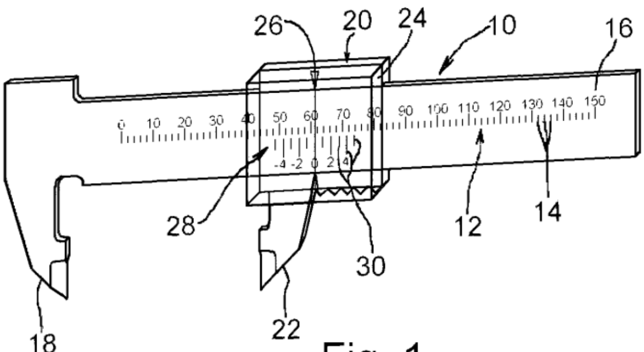


Fig. 1

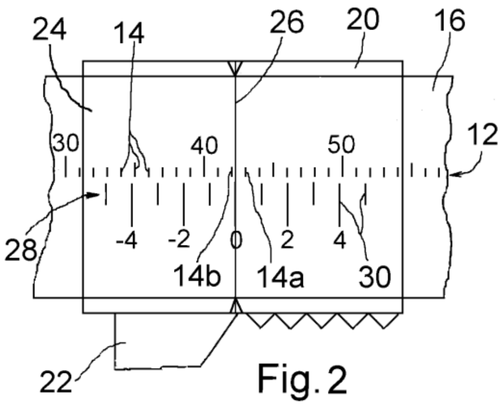


Fig. 2

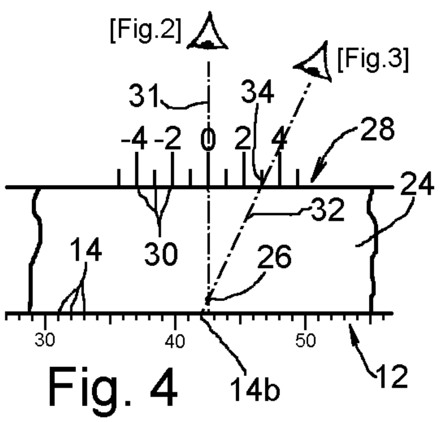


Fig. 4

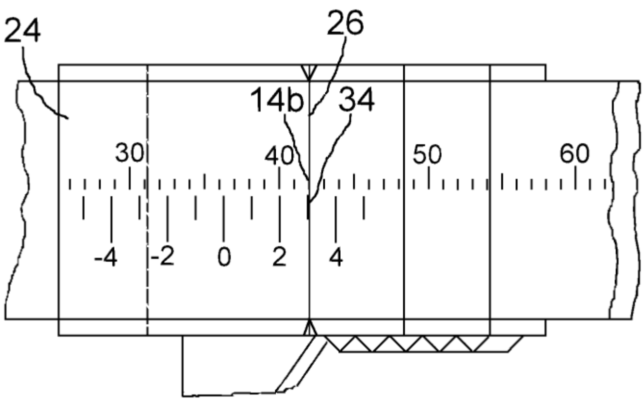


Fig. 3

Document B – Patent specification GB2123123B filed 25^{th} January 2005 i… of MegaLabs, Inc., without claim to priority. Patent granted 1^{st} June 2007.

Size Gauge

This invention concerns a gauge for measuring distances, such as may be used to check the size of mechanical parts in a manufacturing process. A known gauge of this type has a first jaw which slides relative to a scale attached to a second jaw. The distance between the jaws can be read off the scale by a pointer on the first jaw, enabling the size of a part placed between the jaws to be measured. The size of the part can be determined to an accuracy not much better than the distance between adjacent graduations on the scale, as it is difficult to see and estimate fractions of this small distance.

A known type of display scale for a scientific instrument is shown in Figure 1. A slider 2 moves along a main scale 3 formed by dotted graduation marks 4 which are elongated and extend transverse to the direction of movement of the slider. The ends of the graduation marks 4 are linked by solid diagonal lines 6. As illustrated, the graduation marks 4 are also slightly inclined, so that they form a regular zig-zag pattern together with the linking diagonal lines 6. An edge 5 of the slider 2 is aligned parallel to the graduation marks 4. The fraction of the distance between the two closest marks 4 at which the edge 5 of the slider lies can be estimated by the point at which the edge 5 intersects the diagonal 6a linking those closest marks. For this purpose, the edge 5 is provided with a secondary scale 7. The main scale is quite complicated and must be accurately engraved and is therefore difficult to make. The slider also has to be guided very accurately for purely linear movement along the main scale 3 (so that the slider edge 5 remains exactly parallel to the graduation marks 4).

The present invention provides a distance measuring gauge which is more accurate and easier to make, comprising a moving scale slidable adjacent a fixed scale so that graduations on the moving scale are alignable with graduations on the fixed scale so as to indicate a coarse measurement on the moving scale and a fine measurement on the fixed scale, the fine measurement corresponding to less than the distance between adjacent graduations on the moving scale. “Moving” and “fixed” are used here simply in a relative sense.

Advantageously, where it is desired to measure a distance to the nearest 1/n part of the increment between adjacent moving scale graduations, the fixed scale consists of n + 1 graduations (and therefore n increments) and covers a distance denoted by n graduations (or n-1 increments) on the moving scale. Preferably the 0^{th} graduation on the fixed scale is made to align with the 0^{th} graduation on the moving scale when the jaws are touching (i.e. closed together), each 0^{th} graduation being that at the extreme end of its respective scale, closest to the respective jaw. Then when the jaws are at any given separation, the previous graduation on the moving scale with respect to the 0^{th} graduation on the fixed scale indicate the whole number of increments by which the jaws are separated, and if the x graduation on the fixed scale lies closest to any of the graduations on the moving scale, then the jaws are separated by an additional fraction of a moving scale increment x/n. For example, where the moving scale is graduated in 1 mm increments, the fixed scale can consist of 11 graduations denoting 10 increments, the fixed scale covering a total distance of 9 mm, i.e. 9 moving scale increments or 10 moving scale graduations. In this case if for example, the 0^{th} graduation on the fixed scale lies between the 5^{th} and 6^{th} graduations on the moving scale and the 8^{th} graduation on the fixed scale is more closely aligned with a moving scale graduation than any of the other fixed scale graduations, then (as further explained below) the distance between the jaws is 5.8 mm (to the nearest 0.1 mm) (= 5 + 8/10 mm).

An illustrative embodiment of the invention is described below with reference to the drawings, in which:
Figure 1 shows the known scientific instrument scale referred to above;
Figure 2 shows the illustrative measuring gauge with its jaws closed;
Figure 3 corresponds to Figure 2 but shows the jaws opened to a separation of 5.8 mm, and
Figure 4 is an enlarged diagrammatic view of the fixed and moving scales in the position shown in Figure 3; none of these figures being drawn to scale.

Referring to Figure 2, the measuring gauge has a moving scale 12 attached to a moving jaw 16. The scale 12 slides in a slot 18 formed along a main body 10. A fixed jaw 14 is integrally formed with the main body 10. A fixed scale 22 marked out along the body 10 along one edge of the slot 18 lies juxtaposed to the moving scale 12. The two scales are linear and parallel. The moving scale 12 is graduated in 1 mm increments. The fixed scale 22 consists of 11 graduations or 10 increments, dividing up a total distance of 9 mm, as described above.

Referring to Figures 3 and 4, as shown, the 0^{th} graduation 20 on the fixed scale 22 lies between the 5^{th} and 6^{th} millimetre graduations on the moving scale 12 (see Fig. 4 for detail). The distance between the jaws is therefore somewhere between 5 and 6 mm. Of all the graduations on the fixed scale, the 8^{th} graduation 21 is most closely aligned with any of the graduations on the moving scale 12. Because the increment between graduations on the fixed scale 22 is 0.1 mm less than the increment between graduations on the moving scale 12 (0.9 mm versus 1 mm respectively), the 7^{th} graduation on the fixed scale 22 lies (to the nearest 0.1 mm) 0.1 mm to the right of the next graduation on the moving scale 12. Similarly, the 6^{th} graduation on the fixed scale lies 0.2 mm to the right of the next graduation on the moving scale… and so on, such that the spacing between the 0^{th} graduation on the fixed scale 22 and the 5mm graduation on the moving scale = 8 x 0.1 mm = 0.8 mm. The total separation between the jaws is therefore 5 + 0.8 = 5.8 mm.

The same principle will apply at any jaw spacing, so in general for the illustrated gauge, where it is the x^{th} graduation on the fixed scale 22 which aligns most closely with a graduation on the moving scale 12, a distance of x/10 mm has to be added to the jaw separation distance denoted by the graduation on the moving scale lying immediately to the left of the 0^{th} graduation on the fixed scale. Still more generally, where the fixed scale consists of n + 1 graduations corresponding to a total distance of n - 1 increments on the moving scale, when the x^{th} fixed scale graduation is aligned, the distance to be added is x/n of a moving scale increment.

CLAIMS

1. A distance measuring gauge, comprising a moving scale slidable adjacent a fixed scale so that graduations on the moving scale are alignable with graduations on the fixed scale so as to indicate a coarse measurement on the moving scale and a fine measurement on the fixed scale, the fine measurement corresponding to less than the increments on the moving scale.

2. A distance measuring gauge as defined in claim 1, in which the moving scale consists of n + 1 graduations and covers a distance denoted by n graduations on the fixed scale.

3. A distance measuring gauge as defined in claim 1 or 2, in which the 0^{th} graduation on the fixed scale is made to align with the 0^{th} graduation on the moving scale when jaws of the gauge are touching.

4. A distance measuring gauge as defined in any preceding claim, in which the moving scale is attached to a moving jaw and slides in a slot formed along a main body on which the fixed scale is provided.

Document B – Patent specification GB2123123B filed 25th January 2005 i
of MegaLabs, Inc., without claim to priority. Patent granted 1st June 2007.

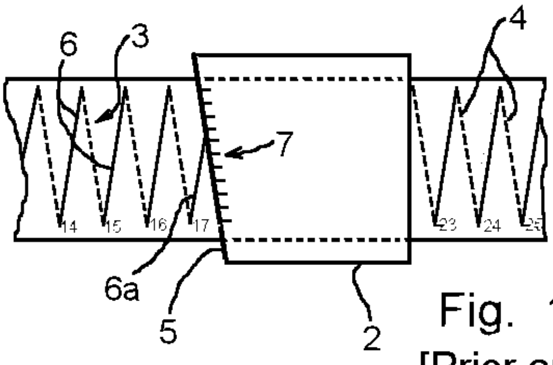


Fig. 1
[Prior art]

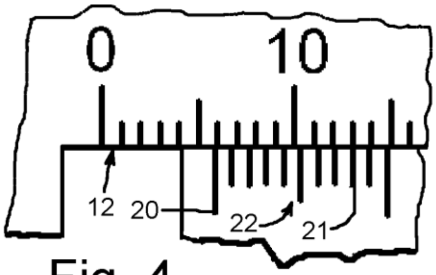


Fig. 4

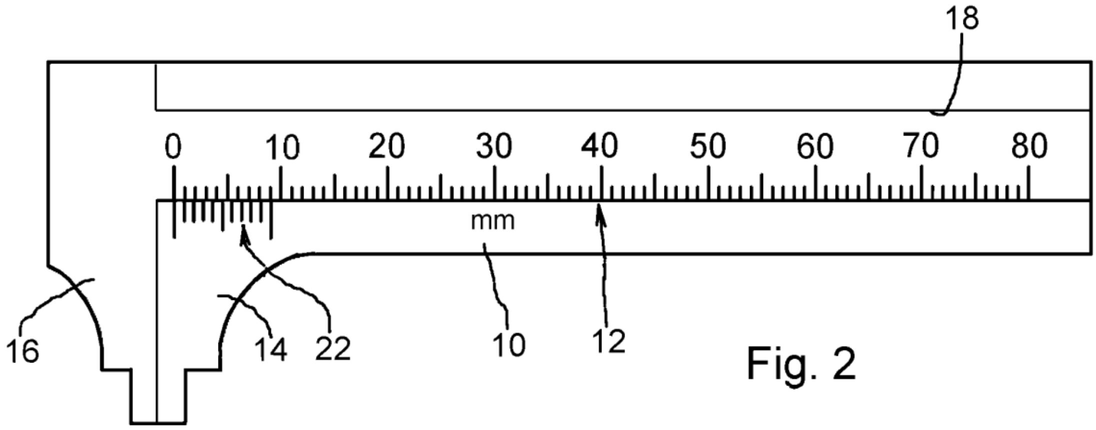


Fig. 2

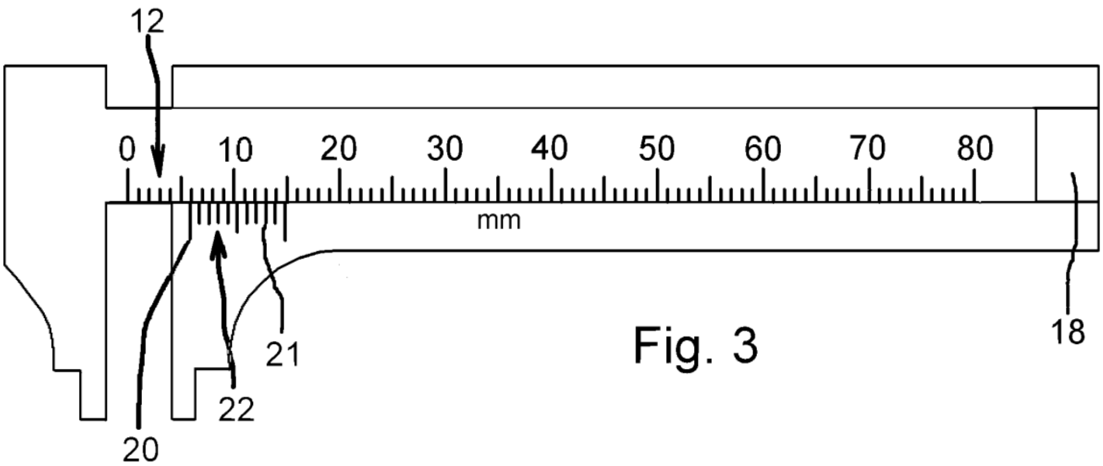


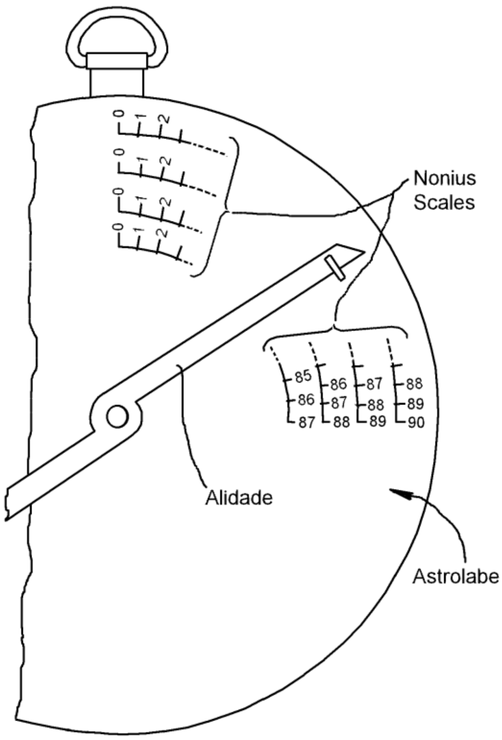
Fig. 3

Pedro Nunes – Inventions

Pedro Nunes (b.1502–d.1578) was an astronomer and mathematician who achieved international recognition in his lifetime. He invented the nonius to improve the astrolabe's accuracy. The astrolabe (see drawing below left) is a medieval instrument used among other things to measure the angle at which a star lies relative to the observer's vertical. The nonius consists of a number of concentric arcs traced on the instrument, each successive one being divided into one fewer divisions than the adjacent outer arc. Thus the outermost quadrant consists of 90° in 90 equal divisions or parts, the next inner has 89 divisions, the next 88 and so on.

A loop is provided by which the astrolabe is suspended vertically. A pivoting arm (the alidade) is then lined up with the star to measure its angle. The arc and the most exact division on which the alidade falls are noted. A table such as that on the right can then be consulted to provide the most exact measure in degrees.

In March 2004, the University of Lisbon discovered a notebook dating from 1577 in which Nunes wrote, "It would simplify my tables if I made an extended nonius scale move with the alidade. By noting where the marks on this scale line up with the marks of a conventional scale on the face of the instrument, angles accurate to fractions of a scale division can be found from a table having only two columns." This passage was quoted in a scientific paper published in a leading metrology journal in June 2004.



Reading	Conversion to Degrees: Quadrant: 89 parts		88 parts		87 parts		86 parts		85 parts	
	Decimal	Deg : Min	Decimal	Deg : Min	Decimal	Deg : Min	Decimal	Deg : Min	Decimal	Deg : Min
1	1.0112	1 : 1	1.0227	1 : 1	1.0345	1 : 2	1.0465	1 : 3	1.0588	1 : 4
2	2.0225	2 : 1	2.0455	2 : 3	2.0690	2 : 4	2.0930	2 : 6	2.1176	2 : 7
3	3.0337	3 : 2	3.0682	3 : 4	3.1034	3 : 6	3.1395	3 : 8	3.1765	3 : 11
4	4.0449	4 : 3	4.0909	4 : 5	4.1379	4 : 8	4.1860	4 : 11	4.2353	4 : 14
5	5.0562	5 : 3	5.1136	5 : 7	5.1724	5 : 10	5.2326	5 : 14	5.2941	5 : 18
6	6.0674	6 : 4	6.1364	6 : 8	6.2069	6 : 12	6.2791	6 : 17	6.3529	6 : 21
7	7.0787	7 : 5	7.1591	7 : 10	7.2414	7 : 14	7.3256	7 : 20	7.4118	7 : 25
8	8.0899	8 : 5	8.1818	8 : 11	8.2759	8 : 17	8.3721	8 : 22	8.4706	8 : 28
9	9.1011	9 : 6	9.2045	9 : 12	9.3103	9 : 19	9.4186	9 : 25	9.5294	9 : 32
10	10.1124	10 : 7	10.2273	10 : 14	10.3448	10 : 21	10.4651	10 : 28	10.5882	10 : 35
11	11.1236	11 : 7	11.2500	11 : 15	11.3793	11 : 23	11.5116	11 : 31	11.6471	11 : 39
12	12.1348	12 : 8	12.2727	12 : 16	12.4138	12 : 25	12.5581	12 : 33	12.7059	12 : 42
13	13.1461	13 : 9	13.2955	13 : 18	13.4483	13 : 27	13.6047	13 : 36	13.7647	13 : 46
14	14.1573	14 : 9	14.3182	14 : 19	14.4828	14 : 29	14.6512	14 : 39	14.8235	14 : 49
15	15.1685	15 : 10	15.3409	15 : 20	15.5172	15 : 31	15.6977	15 : 42	15.8824	15 : 53
16	16.1798	16 : 11	16.3636	16 : 22	16.5517	16 : 33	16.7442	16 : 45	16.9412	16 : 56
17	17.1910	17 : 11	17.3864	17 : 23	17.5862	17 : 35				
18	18.2022	18 : 12	18.4091	18 : 25						
19	19.2135	19 : 13	19.4318	19 : 26						
20	20.2247	20 : 13								
21	21.2360	21 : 14								
					[Figures omitted]					
							72.2093	72 : 13	73.0588	73 : 4
					72.4138	72 : 25	73.2558	73 : 15	74.1176	74 : 7
					73.4483	73 : 27	74.3023	74 : 18	75.1765	75 : 11
			73.6364	73 : 38	74.4828	74 : 29	75.3488	75 : 21	76.2353	76 : 14
			74.6591	74 : 40	75.5172	75 : 31	76.3953	76 : 24	77.2941	77 : 18
74	74.8315	74 : 50	75.6818	75 : 41	76.5517	76 : 33	77.4419	77 : 27	78.3529	78 : 21
75	75.8427	75 : 51	76.7045	76 : 42	77.5862	77 : 35	78.4884	78 : 29	79.4118	79 : 25
76	76.8539	76 : 51	77.7273	77 : 44	78.6207	78 : 37	79.5349	79 : 32	80.4706	80 : 28
77	77.8652	77 : 52	78.7500	78 : 45	79.6552	79 : 39	80.5814	80 : 35	81.5294	81 : 32
78	78.8764	78 : 53	79.7727	79 : 46	80.6897	80 : 41	81.6279	81 : 38	82.5882	82 : 35
79	79.8876	79 : 53	80.7955	80 : 48	81.7241	81 : 43	82.6744	82 : 40	83.6471	83 : 39
80	80.8989	80 : 54	81.8182	81 : 49	82.7586	82 : 46	83.7209	83 : 43	84.7059	84 : 42
81	81.9101	81 : 55	82.8409	82 : 50	83.7931	83 : 48	84.7674	84 : 46	85.7647	85 : 46
82	82.9213	82 : 55	83.8636	83 : 52	84.8276	84 : 50	85.8140	85 : 49	86.8235	86 : 49
83	83.9326	83 : 56	84.8864	84 : 53	85.8621	85 : 52	86.8605	86 : 52	87.8824	87 : 53
84	84.9438	84 : 57	85.9091	85 : 55	86.8966	86 : 54	87.9070	87 : 54	88.9412	88 : 56
85	85.9551	85 : 57	86.9318	86 : 56	87.9310	87 : 56	88.9535	88 : 57	90.0000	90 : 0
86	86.9663	86 : 58	87.9545	87 : 57	88.9655	88 : 58	90.0000	90 : 0		
87	87.9775	87 : 59	88.9773	88 : 59	90.0000	90 : 0				
88	88.9888	88 : 59	90.0000	90 : 0						
89	90.0000	90 : 0								