Blundell Harling F5100 - Mystery Solved

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The Blundell Harling F5100, shown in Figure 1, is considered by many collectors to be the "Holy Grail" of slide rules.

The F5100 is fully 48.7 cm long by 9 cm wide, made of a white plastic and was shipped in a fine wooden box with a hinged lid. The F5100 is a one-sided slide rule with a reversible slide (Photons on one side and Energy on the other). The Blundell design was based on the Thornton F5100 Blackbody Radiation slide rule shown in Figure 2, which was developed during WWII for secret infrared communications between ships and other military uses by the United Kingdom's Admiralty. The Thornton F5100 began production in 1948[1] and was manufactured until the early 1960's. Later (1965 to 1969) the Blundell F5100 appeared, and a thorough Internet literature search reveals very little about the origins of this version – thus the mystery!

Both of these very sophisticated slide rules were based on the Planck Radiation Law – a complex set of equations used to solve blackbody radiation problems - particularly useful for infrared calculations. Each slide rule has 23 scales and can be used for calculations covering a temperature range of -180 °C to 10,000 °C and a wavelength range of 0.3 to 30 microns (red scales).

Accuracy is in the range of 1% to 1.5%. The Blundell version, by comparing the photographs, would appear to be a photo copy of the Thornton F5100, except for the Blundell name on the end of the slide.

In January, 2018 a friend,[2] who was writing about another blackbody slide rule,[3] sent me an excerpt of the slide rule manual for the Blundell F5100. The manual cover page and acknowledgment (See Figure 3) reveals that this slide rule was manufactured by Blundell Harling for an American infrared company by the name of IRCON (now owned by Fluke Process Instruments). IRCON obtained the license for the slide rule from the Admiralty in Teddington, England in about 1965 and Blundell Harling produced 100 units that were sold all over the world by IRCON until the late 1980's.[4] Later, the remaining stock of five or six slide rules was destroyed by a flood in their warehouse[4]. So the mystery of how the Blundell F5100 came to be created is solved!

Figure 3 shows that the Blundell F5100 sold in 1960's for $150, which in 2017, would be the equivalent of $1160 – a very expensive slide rule! In addition, this slide rule was used by IRCON engineers to develop the "two colour" infrared temperature sensor measurement system, now used extensively throughout industry.[3]

Both the Slide Rule Gazette and the Journal of the Oughtred Society have articles detailing the operation of these and other blackbody radiation rules. References can be found below.[5]

Notes

1. --------, A slide rule for blackbody radiation calculations, European Scientific Notes, 2(16):234-236, 1948
2. Professor Raymond Chandos, private communication January 2018.
3. Chandos, Ray, *The Making of the Picket Model 17 Blackbody Radiation Slide Rule,* Journal of the Oughtred Society, 28:1, Spring 2019
4. Mr. Vern Lappe, retired VP of Sales, IRCON, private communication January 2018.
5. Black Body Radiation articles:

   A. Lovett, Rod, *The Pickett 17 Black Body Radiation Slide Rule,* Slide Rule Gazette. Issue 16 Autumn 2015, page 98.

   B. Stewart, Sean M., *The Aristo System Czerny Slide Rule for Thermal Radiation Calculations,* Journal of the Oughtred Society, 22:1, 2013, pages 16-24.

   C. Hughes, Richard Smith, *The F5100 Black Body Radiation Slide Rule,* Slide Rule Gazette. Issue 10, Autumn 2009 page 75.

   D. Andrews, Howard W. PhD., *A Slide Rule for Radiation Calculations*, Journal of the Oughtred Society, 11:1, Spring, 2002, pages 32-35.