

The Gerber Derivimeter

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Although the Gerber Variable Scale¹ and its big brother the Gerber GraphAnalogue are not true slide rules, many members of the Oughtred Society find both of them very appealing. These two innovative instruments were developed by Heinz Joseph Gerber (1924 – 1996), an ingenious and prolific inventor and the founder of the Gerber Scientific Instrument Company.^{2,3} Less well known is another, equally remarkable instrument that Gerber created in 1953 called the Gerber Derivimeter.

The storage case for the Derivimeter is made from the same tan, artificial leather and black velvet that is used for the Variable Scale and the GraphAnalogue. The Derivimeter is almost square, the black aluminum base measuring 4 1/8 inches deep, 3 13/16 inches wide, and 1/2 inch thick (10.48 cm x 9.68 cm x 1.27 cm). A 3 1/8 inch (7.94 cm) diameter circular opening occupies most of the base. Transparent plastic disks at top and bottom protect the working components, which rotate within the circular cavity.

The Derivimeter is a “slope reader” used in finding a derivative of a function. As with the Variable Scale and the GraphAnalogue, the Derivimeter depends on the uniform deformation of a spring to solve a mathematical relationship – in this case the slope of a curve at a specific point on a graph.

In use, the operator places the instrument over a graph with the Derivimeter index above the point in question, turns the central mechanism to align the

index to the curve, and then adjusts several pins to bend a thin strip of spring steel into conformity with the curve. A pointer then indicates on a circular scale the tangent of the slope angle and the sign (positive or negative).⁴

The Derivimeter shown in the accompanying photographs (See Figures 1-4) was obtained at the Dayton, Ohio, Hamvention several years ago. Tom Perera, the well-known authority on telegraph keys, offered the instrument for sale at his flea-market booth. A four digit number (2155) is inscribed near the back of the right-hand edge of the base. Without other examples to compare this with, I am uncertain if this number is a manufacturer’s serial number or a former owner’s inventory number.

The Gerber Scientific Instrument Company also produced a device called the Equameter, which has been described⁵ as follows:

electrically driven analog computer which performs harmonic analysis and curve fitting directly from the data being analyzed. . . . The Equameter analyzes a curve in terms of a Fourier series, a power series, or a least square fit, according to the company.

However, that instrument would probably be too large to fit into the slide rule cabinet.

Notes

1. For those not familiar with Gerber’s Variable Scale, there is a nice description in the History of Computing section of Oughtred Society member Nathan Zeldes’ web site at <http://www.nzeldes.com/HOC/Gerber.htm>
2. For a brief biographical sketch of H. J. Gerber, see <http://amhistory.si.edu/archives/AC0929.html>
3. For an historical sketch of the Gerber Scientific Instrument Company, see <http://www.fundinguniverse.com/company-histories/gerber-scientific-inc-history/>
4. For more information about the operation of the Derivimeter, see U.S. Patent 2,791,836, awarded to Gerber on 14 May 1957. (A good online source for patent drawings and text is the advanced search feature of the European Patent Database at <http://worldwide.espacenet.com/>.)
5. Chemical Engineering News, Volume 34, No. 31, page 3708, 30 June 1956.



Figure 1. The Gerber Derivimeter and Case

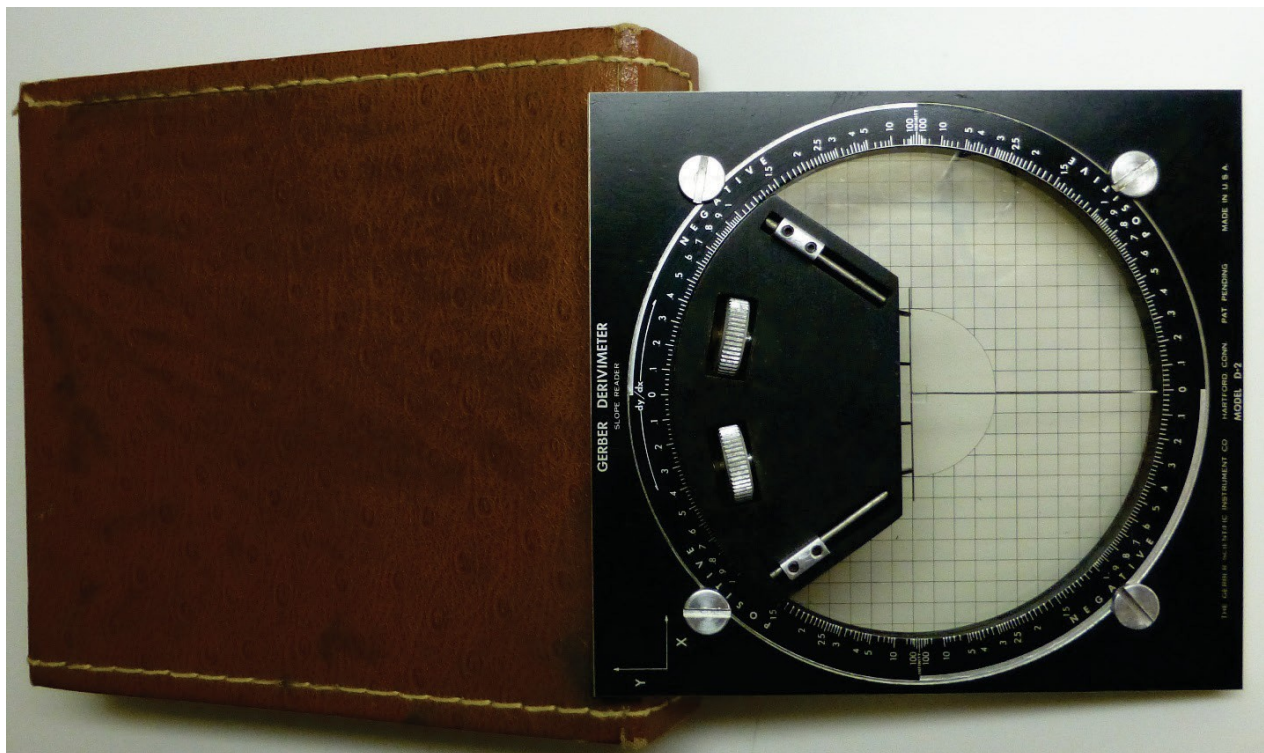


FIGURE 2. The Derivimeter

Showing the square base; the rotating element with adjusting pins, spring, and indicator; the circular scale of tangents; and the transparent plastic disks. The lower disk is ruled for easier alignment with the axes of the graph.

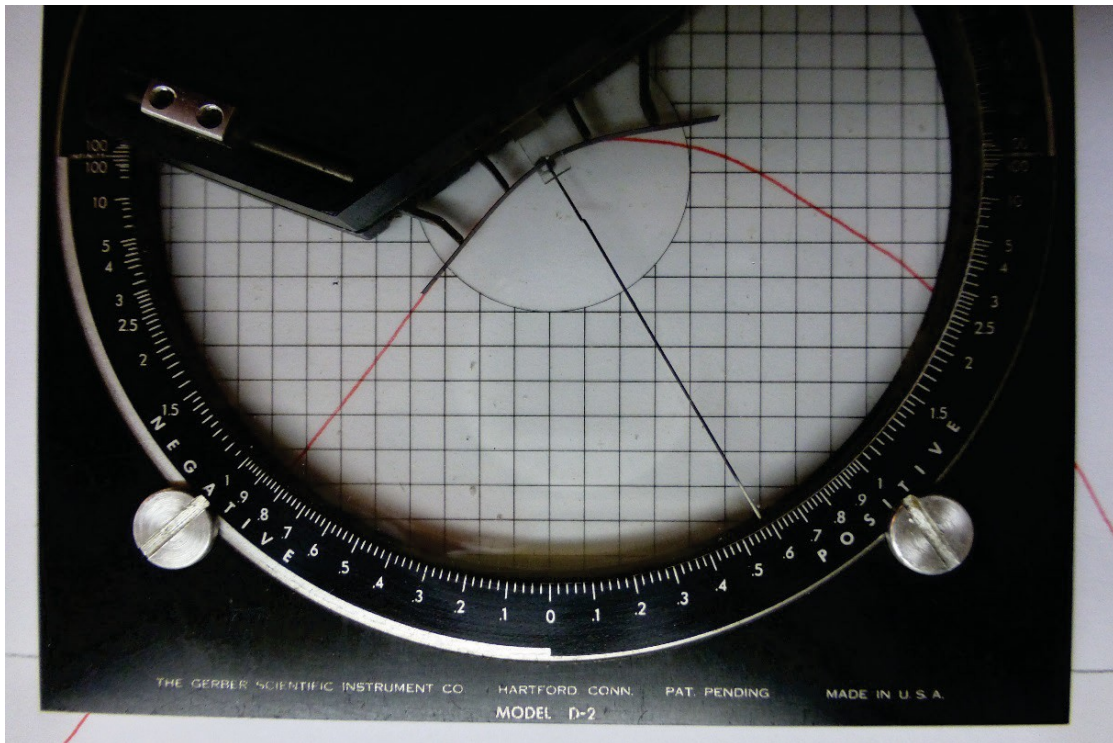


FIGURE 3. The Derivimeter

Shown indicating the tangent of the slope at a point on a curve. (The curve is a purely arbitrary drawing for demonstration only.)

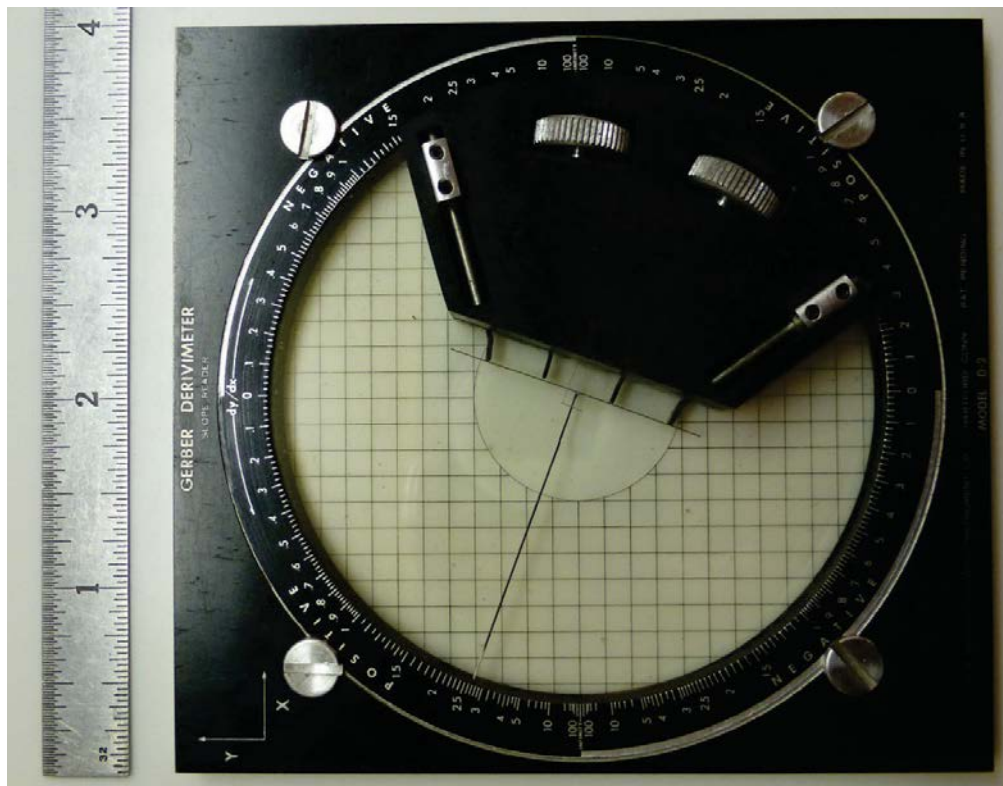


FIGURE 4. Another View of the Derivimeter