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## Palmer's Computing Scale – Revisited

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Bobby Feazel

In my earlier article on “Palmer’s Computing Scale,” [1] I was not able to trace Fuller past 1849. The only clue of his later involvement was Cajori’s statement [2] that “Mr. Fuller sold his telegraphic computer in New York in 1860.”

Just before the article was published and mailed, another look through Cajori revealed that he had indeed corrected, in Appendix A, his statement about the 1860 New York date and, further, he admitted that the “Palmer’s Computing Scale” was known in England, not just in Massachusetts and New York as previously stated. This late revelation certainly caused some anticipation about how much more information was yet to come to light.

After publication, a significant amount of new information came forth, most of it very enlightening, and some of it very exciting from a collector’s point of view. This article is intended to share this new information with all our members.

Bob Otnes called with one of these enlightenments by announcing that he had discovered two 1909 articles written by Cajori: one, “Aaron Palmer’s Computing Scale” [3], and the other “John Fuller’s Circular Slide Rules” [4]. I am sure you can imagine the concern before their arrival in the mail.

As it turned out, with great relief, Cajori, it seems had far less hard evidence to write about the Palmer than we do today. His whole treatise was based solely upon the information contained in the first three instruction books and quotes from previous authors. He states:

. . . now-a-days, Palmer’s Computing scale is practically unknown and that we have found it impossible, after diligent search, to purchase a copy of the *Key* to the computing scale.

Cajori apparently never saw any issue of the scale at the time he wrote his articles.

Next came a very cordial phone call from a book collector on the West Coast. He generously volunteered to send photocopies of his portfolio and books on Palmer, from which were discovered three very important pieces of new information.

First, in his portfolio are 23 pages of printed material. Some of these pages contain the typical letters of recommendation that were solicited by Fuller, and two pages contain an analytical table of 178 mechanical movements. The first 16 pages reveal that there was a fourth instruction book composed of 93 separate pages. These pages are a reprint and composite of the 93-page instruction book. Cajori stated in his last article that Fuller brought out a fourth book about 1860 bearing the following title page:

Telegraphic computer, a most wonderful and extraordinary instrument, by which business questions, of every possible variety, are instantly performed: a safe and speedy check to avoid vexatious errors, affording at the same time a greater amount of practical business knowledge, than can be obtained from ten times the cost of this work. Sold only by subscription. John Fuller, New York.

This exact title page is the first page of the 16 pages of instructions found in the portfolio and clearly shows an 1852 date. This means that the fourth book of instructions would have been published some time prior to 1852, not 1860 as Cajori states. A bound copy of this book is not known at this time so there remains a mystery about its real publication date.

Second, the information found in this portfolio allows us to trace Fuller from 1849 to 1852. Between 1849 and June 1851 he traveled to Scotland, Ireland, France, Germany, Belgium, and Holland trying to sell the computing scale. He returned to London by June 1851 where he exhibited his scale and won some kind of prize at the Crystal Palace. He left London in the fall of 1851 and returned to Baltimore. From late 1851 until 1852 and possibly later, he was selling his scale in the Baltimore, Washington D.C., and the New York City area.

Third, and certainly the most exciting, is the discovery of a brass scale. It is not a full size scale but is the small "pocket scale" affixed to the back cover of the instruction book, *Palmer's Pocket Scale*. This book was published in Rochester in 1844.

The next lot of information came from a fellow collector and member of the Oughtred Society, from Cambridge, England. Without his energies and interest, the remainder of this article could not have been written.

The most exciting part of his efforts reveals that he has in his collection a Palmer's rule that one has to assume is a prototype, or at least it would have been called issue No. 1 had it been known at the time of the first article. It is distinguished on the scale side by not having a gauge point "D" (diameter) at 314 on the outer scale, and it does not have "Engraved by George G. Smith 186 Washington St. Boston." The directions on the back side are worded exactly like the next issue, but the placement of the words is somewhat rearranged. The back side is also missing "D.H. Ela, Printer, 37 Cornhill, Boston."

The other significant information his efforts turned up comes from copies of a fifth instruction book that is in the Science Museum in London. This book is titled *The Computer*, and is larger than the first three books (5" X 7"). Its Preface:

The ingenious instrument to which the following pages are a Key, was brought to my notice by Mr. Fuller; and having occasion to express, in public, an opinion upon it, I examined it with some care. The result was a high estimation of the ingenuity of the design, and

the accuracy with which it was worked out, and wonder at the number of arithmetical problems which it will work or check. If our moneys and measures were established upon the decimal system, it is hard to say what limits there would be to the usefulness of THE COMPUTER. But the original Key accompanying it was not written so clearly as I thought desirable to make it generally useful, nor was it arranged in any order. I suggested that a new Key should be prepared; and, when other help failed, I undertook to prepare one, from a conviction that, with simple directions for working the commonest sums in trade and commerce, THE COMPUTER would come to be considered a necessary desk companion in every shop and warehouse. I am not responsible for the examples given, but only for the manner of stating them, and for the explanations of the various signs.

G.V. Marsh  
Manchester, June, 1871

Also included in the back of this book are certain letters of recommendation from which we get our only clues to Fuller's whereabouts from 1852 to 1871. There is one letter dated October 31, 1859 from Charles Manby, secretary of The Institution of Civil Engineers, Westminster, and the next is May 8, 1865 from Professor A.D. Morgan at University College, London. There is an article from the *Manchester Guardian* on March 9, 1868, with the only other date being June, 1871 shown in the preface above.

It is felt that G.V. Marsh may have bought out Fuller about 1870 thus ending Fuller's involvement in the Scale. Marsh's rewrite of the instructions indicates that he disagreed with Fuller's presentation of the scale (i.e., gauge points and Magic Pill) because he wrote his instructions in a manner not unlike the ones we are familiar with in the 20th Century.

A careful comparison of the gauge points listed on page 21 of Marsh's book, and what we called Issue 5 of the scale, reveals five points missing from the scale. Therefore, there has to be another issue of the scale after Issue 5. The scale companioned with the Science Museum book is an Issue 4, not the latest issue as would be assumed.

At this point in time, we can now say there are at least seven issues of the scale from 1842 - 1871, and five distinct issues of the instruction book.

It is still believed that the printing process dictated that things could only be added, not deleted from, the scale. Of course, if the seventh issue comes to light, it is possible that this theory may have to be revised.

1. Feazel, Bobby. "Palmer's Computing Scale": *The Journal of the Oughtred Society*, Vol 3, No. 1, February 1994.
2. Cajori, Florian. *A History of the Logarithmic Slide Rule and Allied Instruments*, New York: The Engineering News Publishing Company, 1909.

