BOOK REVIEW

The Impact and Legacy of *The Ladies' Diary* (1704–1840): A Women's Declaration

Reviewed by Laura E. Turner

The Impact and Legacy of The Ladies' Diary (1704–1840): A Women's Declaration
Frank J. Swetz

Recent years have seen a number of new scholarly and popular works highlighting the contributions, often unlikely and under-appreciated, of women to mathematics and describing the social and cultural conditions that helped and, more

commonly, hindered them. Swetz's *The Impact and Legacy of The Ladies' Diary (1704–1840): A Women's Declaration*, which treats the activities of both professionals and amateurs involved in the consumption and creation of mathematics, forms part of this body of literature.

For those unacquainted with the periodical, *The Ladies' Diary: or, the Woman's Almanack* was published annually in London and appeared in print between 1704 and 1841. Almanacs sold well in England during this period. For people of limited means who could not afford books, they provided reading material and recreation. They also contained information about weather forecasts, tidal flow,

and astrological predictions. In some senses this particular almanac was quite ordinary early in its history, though by design it lacked astrological content. That said, the *Diary* was only the third periodical dedicated to women, and the first to survive more than one year [Cos02, p. 50]. It was originally intended to provide such “genteel” subject matter as recipes, poems, household tips, health advice, and romantic stories, and to “entertain and provide diversion” through enigmas (riddles, often written in iambic pentameter). By 1708, however, it also included arithmetical problems, often stated in verse, which, according to the directions of its founder and first editor, should be “pleasant” but “not too hard” [Swe21, p. 21].

The *Diary* was the first widely-read popular periodical to contain this form of content, and in this sense, it was groundbreaking. The problems in it were immediately and enduringly popular with its readers (indeed, close to forty other almanacs and periodicals would contain mathematical question and answer sections in the eighteenth and nineteenth centuries [Des14, pp. 55–56]), who were invited to submit solutions and new problems for publication. Over time, the *Diary* became increasingly devoted to this topic. Because the mathematical questions were selected according to editors' interests, however, and because several later editors were faculty members at military academies, the problems became increasingly applied and technical (and difficult). As this occurred, women evidently submitted fewer mathematical solutions; the scope and level of the material had shifted beyond the limited education and training most received.¹ Ultimately, the *Diary*

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¹One notable exception is Mary Somerville, who distinguished herself as a prizewinner in an offspring of the *Diary* [Swe21, p. 120]; see also [Ste20].

became a periodical for ladies in name alone and in 1841 it was merged with *The Gentleman's Diary, or The Mathematical Repository* (founded in 1741) to become *The Lady's and Gentleman's Diary*, which focused on the amusement and instruction of mathematics students.

By Swetz's own testament, the roots of his work on *The Ladies' Diary* began developing in the 1970s when he became acquainted with the periodical through the work of Teri Perl [Per77, Per79]. Against the backdrop of educational research on gender and mathematics during this period—which saw the posing of questions about why fewer (cisgender) women were drawn to study mathematics than (cisgender) men, how prevalent sex-linked differences in mathematical achievement actually were, and whether they were cognitive or attitudinal—*The Ladies' Diary* emerged as an apparent contradiction not only to the physiological hypotheses proposed by some researchers but also to the socialization of the proper English lady of the Georgian era.

All of this made the *Diary* something of a fascination to Swetz, and subsequent work on it by other scholars during the aughts further piqued his interest. He began featuring problems from the periodical within *Convergence*, the online Mathematical Association of America journal devoted to the history of mathematics and its use in teaching, and included them in a book of historical word problems. More recently, he wrote a feature article in *Convergence* [Swe18] describing the historical uniqueness and mathematical significance of the periodical for women and as a problem-solving resource, and placing it within its social, cultural, and mathematical contexts. His latest book is a continuation and expansion of this effort.

In this work, Swetz addresses a number of different themes surrounding the origin and evolution of *The Ladies' Diary*. His opening chapter sets the scene by depicting the gathering of three fictitious male university students, one of whom is a *Diary* reader, in a London coffeehouse in 1754. There, his friends poke fun at his interest in a periodical for ladies, but he encourages them to attempt some of the mathematical problems it contained and shows them an exercise proposed by a “Miss Maria A-t-s-n” (Mary Atkinson) for which he planned to submit a solution.² Through this exchange, which has one friend reject mathematics as “the stuff of tradesmen” and which depicts Atkinson as a suspected “bluestocking” and perhaps also “a prune, a dried up old spinster” [Swe21, p. 3] in the eyes of the gentlemen, Swetz introduces contextual factors that he explores in subsequent chapters, as well as the arguments at the core of his work: that women actively engaged in mathematics in spite of the social and cultural forces working against them, and that the *Diary* was an important context in which this engagement occurred.

²This is a real problem from the almanac, one to which Swetz later returns.

In the second chapter, Swetz briefly provides background concerning English literacy rates and popular publications from the mid-seventeenth century on, as well as a cursory introduction to the *Diary* and its apparent value to its readers and subscribers. Notably, this value is assessed only in connection with the mathematical content of the periodical, a matter to which we will return below. At the close of the chapter he identifies three particular stimuli as having influenced the direction of *The Ladies' Diary* across its lifetime. These are the individual editors, the ladies for whom the journal was ostensibly intended, and British mathematical reforms and movements. The remainder of the book is devoted to exploring these factors.

The third chapter is where the body of Swetz's book begins. In it, one learns about *Diary* founder John Tipper's sincere desire to create a periodical that would be “useful and appealing to women” [Swe21, p. 18] by including the broad swath of content described above, and about the actions of the next editor, Henry Beighton, who took the journal in a more serious mathematical direction and broadened the audience to both sexes by openly soliciting male readers. Subsequent editors³ also left their marks on the *Diary*. Swetz outlines their tenures, and in doing so he describes how the almanac was converted from its original design to one focused on problem solving.

In the fourth chapter, which discusses the attraction of enigmas and mathematical problems to *Diary* readers, some context concerning the history of the enigma and its popularity is provided, and modern readers are guided through the solution of an 1835 example.⁴ Swetz also demonstrates the sorts and complexity of mathematical problems under different editors and then returns to the perspective of *Diary* readers, describing the informal problem-solving gatherings in which some participated; the use of pseudonyms as social protection and as a demonstration of wit; and an example of a seemingly

³These were Beighton's wife, Elizabeth, followed by Robert Heath, Thomas Simpson, Edward Rollinson, Charles Hutton, and Olinthus Gregory.

⁴It reads: “The regal crown shines bright with many a gem,

But I oft bear a brighter diadem;
I own indeed no purple robes I wear,
But yet the lily's self is scarce more fair.
A friend, like great Medea, in dark times,
Am I to learning patron of all climes.
E'en Jove, when he was ruler of the sky,
Never received more sacrifice than I;
The lamb, which on the mead is sporting free,
Must soon be a burnt offering to me.
The mighty whale, the sov'reign of the main,
For me is captured, and for me is slain.
The bee may build his cells with instinct fine,
Those waxen homes must melt before my shrine.
And when the sun has fallen from the skies,
Then, clad in all my glory, I arise;
I scorn the day, but glory in the night,
And only shine when I alone am bright.”

flirtatious exchange within its pages during a period of confining social limitations.

Having demonstrated the appeal of mathematical offerings to women *Diary* readers, in the fifth chapter Swetz turns to the opportunities for women to study mathematics before and during the lifetime of the periodical. Here, a background of mathematics in England during the sixteenth and seventeenth centuries is discussed, and the significance of English-language works written or translated during this period which advocated the use of mathematics by common people is stressed.⁵ Although such works spurred the creation of public lectures on mathematics, local mathematical and scientific societies, and demand for formal instruction, women were generally excluded from these circles. The remainder of the chapter describes avenues through which some English ladies⁶ were able to obtain (usually limited) training in arithmetic, and the ways in which those who did were viewed by society.

The focus of the sixth chapter is an assessment of the intellectual value possessed by the *Diary*. Here, emphasis is placed on the mathematical needs it fulfilled in providing guidance and feedback (via published solutions) vis-à-vis mathematical problem solving, and the scientific facts and explanations it gave readers through expository pieces, instructional essays and dialogues, and eventually a “question and answer” column.

In the seventh chapter, Swetz explores links between the *Diary* and broader mathematical concerns such as shoring up the foundations of Newton’s theory of fluxions, finding a method to more precisely determine longitude at sea, and connecting more deeply with mathematical and scientific developments from mainland Europe. Some connections are more clearly documented than others; examples of *Diary* solutions utilizing Newton’s fluxions are provided and the reader is told that after 1835 such methods were abandoned in favour of Leibniz’s approach to differentiation and integration in a “shift to a more rigorous calculus [which] paralleled that generally taking place in Britain at this time,” but no explanation is given about how or if it related to the efforts to strengthen Newton’s calculus cited at the beginning of the chapter. Additionally, a greater reliance on secondary literature could have provided a more nuanced picture of the connections between the *Diary* and concomitant mathematical developments. Albree and Brown [AB09, p. 32] assert, for example, that “[a]s challenging as many of [the mathematical questions in the *Diary*] were and as ingenious as some of

their answers were, by their intent, they played no part in any research program or extended theory.”

Chapter eight questions whether the *Diary* truly served the needs of women throughout its history. After returning to the actions of its editors, Swetz considers the women contributors themselves, who ranged in age and marital status. Some, such as teenage sisters Anna and Mary Wright of Cheshire and a Mrs. Mary Nelson, demonstrated considerable mathematical competence and poetic wit in the early years of the *Diary*.⁷ Swetz uses such examples, along with statistical data about respondents to mathematical problems, to emphasize that problem solving in mathematics was important to women, who enjoyed and excelled at it in spite of the obstacles they faced.⁸

In the ninth and final chapter, which summarizes the effects and societal impact of the *Diary*, Swetz’s focus is the published mathematical descendants it inspired in Britain and America. This brief chapter provides concluding remarks and is followed by an epilogue distinguishing Swetz’s work on *The Ladies’ Diary* from other studies of the periodical and highlighting questions for future consideration.

Several features of the book warrant particular attention. An examination of its fairly extensive bibliography reveals that not all works are cited, and at several points in the text, secondary sources are omitted from discussions in spite of considerable overlap in content. This makes it difficult for the reader to determine what is new in the present text and has the unfortunate effect of making the book appear somewhat disconnected from the relevant secondary literature, a heavier reliance on which could have provided additional important insights.

In exploring the “real worth” of *The Ladies’ Diary* [Swe21, p. 10], for example, Swetz cites enthusiastic testimonies from readers concerning its mathematical content. Kathryn James, however, has pointed out that not all readers valued this material equally. Rather, many used it “primarily for notes on accounts, for paper for contracts, as a notebook, as a diary, just like the other gazettes and calendars and almanacs which filled the popular market” [Jam11, p. 15].⁹ What is more, the significance of its literary content and its union of mathematics and poetry have been stressed by others and seem to deserve greater

⁵Consider the cautionary view that, as phrased by Robert Recorde, “yf nombre be lackynge, it maketh men dumme, so that to most questions, they must answer mum” [Swe21, p. 59].

⁶A lady was a woman born to a respectable family. In the period treated here, her father might have been a clergyman, academic, or lawyer, for instance, or possibly a country squire with sufficient land or a merchant with sufficient wealth [Swe21, p. 4].

⁷[Cos00, p. 202] hypothesizes that Mary Wright and Mary Nelson were the same person, though Swetz does not address this possibility.

⁸As Swetz notes, such data have been used by others but must be taken with a grain of salt: the assumption that all who submitted work under a woman’s name were, indeed, women, is disputable [Swe21, p. 118], [Mie08, p. 190], [AB09, p. 17].

⁹Anna Miegón points to evidence implying that the *Diary* was used as a record book by some women. In [Mie08, p. 116], she describes the annotations of Diary numbers by Alice Le Neve and her mother between 1724 and 1774, which included records of boarding and other expenses (such as costs of mending shoes and purchasing new stockings), as well as rent paid by tenants and crops sown on family land.

attention in summarizing the intellectual value of the *Diary*, particularly early in its history. Tipper, for instance, cited three problems from 1710 (including the “Bow-Steeple” problem of Figure 1) as

good patterns how an arithmetical question should be composed: namely, to cloathe it with such delightful circumstances, as should egg us on to solving the most useful part. To heighten delight, whet the imagination, and sharpen invention all at once, to enlarge the capacity of the mind, and raise our pleasure to the highest pitch it is capable of. [Jam11, p. 15]

Arithmetical Question 16. by way of Letter.
 London, May the first, 17 hundred and 9:
 DEAR FRIEND,
 I MAKE bold for to send you a Line
 To inform you what hapt to me this very day :
 As I pals'd with some Friends thro' Cheapside, in our way
 We were viewing Bow-Steeple, says a Spark that stood by,
 Can you tell, Sir, by Art, how many Feet that is high ?
 “I'll lay you I can, Sir, a Piece to be spent.
 “ 'Tis done, quoth the Spark: I reply'd, “I'm content.
 We laid down our Money. The Sun shining plain,
 I measur'd the Shadow, which I found to contain
 Two hundred fifty three Feet, half a quarter,
 And the Clock jui struck Twelve as I finish'd the matter.
 Now (Good Sir) inform me, How high is the Steeple ?
 For you can't beat it into my Head with a Beetle
 How it is to be done:—Were the Wager to find, Sir,
 A pritty plump Girl, or a good Glafs of Wine, Sir,
 I think I could do it as well as the batt ;
 But these grabbed hard Numbers I ne'er could digest.
 Fail me not in this pinch, Sir, whatever you do,
 If you should, my dear Money away I shall throw :
 Besides, all my Friends, Sir, will laugh at me too. }

Figure 1. The “Bow-Steeple problem” of 1710. Note that it is directed at a gentleman, not a lady.

This coupling of mathematics and poetry is perhaps what led Swetz to remark that the periodical “projected an aesthetic rationalism” [Swe21, p. 114], but he neither defines this term nor provides explanations of this epistemological position or its cultural context.¹⁰ The *Diary*, however, is emerging as significant in these very connections, particularly insofar as the roles of women are concerned. Jacqueline D. Wernimont has argued that part of the importance of the periodical to early modern and eighteenth-century studies stems from the fact that it serves as “a textual record of the centrality of women to the development of a

¹⁰Timothy J. Reiss has described aesthetic rationalism within the context of the “mathematization” of knowledge in early modern Europe through the replacement of the trivium with the quadrivium, and in particular of language with mathematics and a new rational method as a means of discovery. Through this shift, he argues, the “fictive imagination” (which produced such arts as poetry and literature) and mathematical practices were “wholly dependent on one another” [Rei97, p. 16]. He has characterized aesthetic rationalism within this context as a general effort to attain “depth with clarity, variety without confusion, and interest with pleasure” [Rei97, p. 194], [Wer17, p. 338].

national and individual aesthetic rationalism that found pleasure and meaning in exploring math and poetry together [emphasis added]” [Wer17, p. 338].

The spirit in which the book is written deserves comment. Swetz approaches *The Ladies' Diary* with the same fascination evident in his earlier works, and his enthusiasm for the subject is apparent throughout. Problems and their solutions are often presented as images from digitized copies of the *Diary*, demonstrating the original typography. His desire to introduce the reader to such facets of the *Diary* as “the wit, the verbal ostentation and posturing, the format, punctuation and emphasis of written statements, and the intellectual motivation” [Swe21, p. xv] further emphasizes that he still views this text as “a true mathematical treasure” [Swe18] for the reader to explore, appreciate, and enjoy. This spirit is also evidenced by his treatment of the enigmas and mathematical problems, which emerge in part as challenges for the reader to attempt. The book contains many examples thereof, often answered in the text, and adventurous readers will enjoy attempting the word puzzles and mathematical exercises contained in two appendices. There is also a third appendix containing three mathematical problems with worked solutions.

It is noteworthy, too, that this book is one of few histories treating the *Diary* throughout its entire lifetime, and in writing it Swetz has made this fascinating periodical and its history more accessible to a general audience. In fact, while the publisher describes the readership of the book as graduate students and researchers interested in the history of mathematics, with the possible exception of certain mathematical discussions (which are generally self-contained), this can likely be broadened to include undergraduates and others with a reasonably strong mathematical background. Many will enjoy reading this book, and those with an interest in the histories of women in mathematics and of mathematical periodicals are especially encouraged to pick it up.

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