IN MEMORY OF HELEN MERIWETHER LEWIS THOMAS AUGUST 21, 1905–AUGUST 6, 1997

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Abstract

Helen Lewis Thomas was Secretary to Leon Campbell, the first Recorder of the AAVSO, from 1934 to 1937, but worked intermittently on variable stars at Harvard from 1927 until World War II. In 1948 she earned the third Ph.D. degree in the History of Science awarded at Harvard or Radcliffe, being the first American woman to receive this degree. A most versatile scholar, she was successful in a variety of careers ranging from Engineer at the Raytheon electronics company to Head of Publications at the M.I.T. Laboratory of Electronics. She maintained a lifelong interest in the AAVSO.

1. Introduction

It has been said of George Sarton, founder of *Isis*, that he made such stringent demands upon his students that few could survive. Yet he was mentor to the first three in America who received the Ph.D. in History of Science at Harvard and Radcliffe. Mrs. Helen Lewis Thomas actually received an A+ in one of his courses (Sarton 1942) and was awarded her Ph.D. in 1948. Aydin Sayili of Turkey, in 1942 (Russell 1996), and I. Bernard Cohen, in 1947, were the first two to receive the Ph.D. degree in the History of Science at Harvard. Helen was the first woman in America to receive this degree in the History of Science.

Born in New York City, where her mother was a teacher in the public school system, Helen Meriwether Lewis began her early education there. From age 9 to 15 she spent summers on a small island off Long Island, where she was fascinated watching for meteors, hoping eventually to become a "meteorologist," assuming that the term signified the study of meteors (Thomas 1989). She graduated from St. Catherine's School in Richmond, Virginia, in 1924 (St. Catherine's Quair 1924), and entered Radcliffe College where she graduated *cum laude* in Government in 1928. Appropriately to that major, she had been elected President of her dormitory, Bertram Hall, in her senior year.

2. Astronomy at Harvard College Observatory

Helen was a gifted scholar in many fields. Already as an udergraduate she attained part-time employment at Harvard Observatory, where she aided astrometrist Dr. Willem Luyten by measuring the positions of some 1,100 stars for the determination of their proper motions (Luyten 1928). A major purpose of Luyten's research was the discovery of white dwarf stars, then a rare class, important to theories of stellar evolution. In her *Curriculum Vitae* (Thomas 1945), Helen mentions that Shapley had reported her discovery of a white dwarf star. White dwarfs are intrinsically very faint blue or white stars usually discovered by their large proper motions. Most high proper motion stars turned out to be fairly common red dwarf stars. Luyten found that Innes in

South Africa had discovered a star of large proper motion, whereupon Helen determined that its color corresponds to a white star, thus establishing that the 13th magnitude star is in fact a white dwarf (Shapley 1940).

Soon after her graduation Helen married Frederick M. Thomas, but the union did not last and she found it necessary to support herself and her son, Roger. From 1934 to 1937, she was secretary to Leon Campbell, Recorder for the American Association of Variable Star Observers (AAVSO), then affiliated with Harvard College Observatory. In that capacity she also undertook the reorganization of the AAVSO library, participated in the acquisition of visual observations with the 6-inch Post refractor at the Observatory, and helped out at the Observatory public open nights which were in the charge of Mr. Campbell (Hoffleit 1981; 1993). Helen was particularly helpful at the open nights that were especially for children. At the time of the Spring Meeting of the AAVSO in May, 1936, Mr. Campbell was ill and unable to attend. According to the Report of the meetings, Mrs. Thomas "very competently took care of his duties and carried out his plans" (Mayall 1936).

Although she resigned as secretary in 1937 (Campbell 1937), she continued until WWII working on variable stars at Harvard Observatory. In 1939, she rediscovered U Scorpii, Nova 1863, thus being the first to discover that it is a recurrent nova (Campbell 1939; Shapley 1939). She wrote a detailed description of attempts of earlier observers who had searched for the nova between its initial discovery by Pogson in 1863 and 1930 (Thomas 1940). Examining 1,508 Harvard photographs of the region she established that it is indeed recurrent, having shown outbursts in 1906 and 1936. U Sco was only the third star definitely confirmed as a recurrent nova—after RS Oph, confirmed by Mrs. Fleming in 1901, and T Pyx by Miss Leavitt in 1913 (Prager 1940)—among the six verified and two suspected recurrent novae now listed in the latest versions of the *General Catalogue of Variable Stars* (Kholopov 1985–87, Samus 1990). Of one of the suspected recurrent novae, after a thorough literature search Ashbrook (1963) wrote, "V529 Orionis looks to me as phony as a three-dollar bill." He could not comment on the other suspect, V1195 Ophiuchi, a faint star which had not yet been discovered (by Plaut in 1968) but which seems more likely to be a long period variable as its apparent color index corresponds to a red star.

At the 1940 annual meeting of the AAVSO (Neale 1940), Helen presented a paper on the irregular variable TW Peg, reporting on results obtained by the Milton Bureau at Harvard of which she was a member. Her specific results, as reported at that meeting, were not published but were later incorporated in Milton Bureau results (Gaposchkin 1952c). Previously, Russian astronomer B. P. Gerasimovic (1929) had presented his results on this unusual variable. Later, the Gaposchkins (Payne-Gaposchkin and Gaposchkin 1952a, 1952b) gave details in their discussions of all the results obtained by the Milton Bureau.

Cecilia Payne-Gaposchkin in 1938 had inaugurated the Milton Bureau for the determination of the magnitudes on Harvard photographs of some 2000 variables known to be 10th magnitude or brighter at maximum (Payne-Gaposchkin 1939; 1952a). Among early representative results published in 1939, Payne-Gaposchkin includes observations by Helen Thomas on three long period variables in Libra (Payne-Gaposchkin 1939). The sky was divided into 54 areas and the results were published in 1952 (Payne-Gaposchkin 1952b). Mrs. Thomas shared in this work, making the estimates in three of the fields (Nos. 40–42) for over 100 variables, contributing about 50,000 observations (Gaposchkin 1952a, 1952b, and Payne-Gaposchkin 1952b, 1954).

Besides her work in astronomy, for a period of three years she was a scientific writer for the *Christian Science Monitor*, writing on the relatively new field of astronautics (Thomas 1945). In 1937-38, Helen Thomas was also part-time assistant at the Library of Radcliffe college (Hart 1953), and she began graduate studies in the History of Science. Employees at the Observatory were privileged to arrange their hours to enable

them to take courses, generally one a year. However, Helen's graduate studies had to be curtailed by war work.

3. World War II activities

When the U.S. entered WWII, Helen indicates she was "drafted" by the Radio Research Laboratory at Harvard (Aspray 1991). But, as a woman, she felt the work assigned her to be degrading. Hence, when the opportunity arose, she transferred to the M.I.T. Radiation Laboratory to work with Henry E. Guerlac on the history of that Laboratory. In this work she dealt with highly confidential materials, for which she set up a filing system of great help to subsequent workers in the field. Guerlac left in June 1946 and Helen stayed on long enough to complete their project.

In 1947, after leaving M.I.T., she accepted a position at the Raytheon company, an important electronics plant where she worked on guidance-control problems. Her son comments that his mother worked full-time at Raytheon, came home and prepared their meals, and then worked from 7 P.M. until after midnight on her Ph.D. thesis, which she completed in 1948 (Roger M. Thomas 1997).

4. Her dissertation

Her dissertation, *The Early History of Variable Star Observing to the XIX Century* (Thomas 1948), is a true masterpiece, revealing the cultural breadth of the author. In her *Abstract* she describes it as a study of the discovery and observation of variable stars from the time of Hipparchus (II Century B.C.) to Sir William Herschel (XIX Century A.D.). It was the Nova of 134 B.C. that inspired Hipparchus to compile his catalogue of star positions and magnitudes—a compilation upon which Ptolemy based his Almagest. Helen Thomas investigated the catalogues of Ptolemy, Al-Sufi, and Ulugh Beg, and compiled a list of the fifteen variable stars they included, but which, at the times of those catalogues, were not known to be variable. She attributes the lack of discovery of variability before the 16th century to be largely lack of interest and lack of star charts. She cited the current published changes in brightness for these stars, ranging from 0.4 to 1.5 magnitudes. For the majority, the variation is too small for easy naked-eye detection, and for others no suitable comparison stars are sufficiently nearby for accurate estimates.

Mira (omicron Ceti) was the first variable star other than novae to be discovered, by Fabricius in 1596. In 1667, Ismaelis Bullialdi wrote a treatise, *Ad Astronomos Monita Duo*, discussing observations of Mira between 1638 and 1666, and then attempting to arrive at a theory for its variation. This is a rare treatise. Helen obtained a photostat copy from the British Museum, and then translated it from the Latin. (She had studied Latin for eight and a half years, starting at age 9!). Dealing largely with Arabic astronomy, she also delved into studying Arabic in order to translate from original sources (R. M. Thomas 1997).

5. Head of Publications, M.I.T. Laboratory of Electronics

At their 25th Radcliffe reunion in 1953, her classmates were impressed that Helen was a Senior Engineer at Raytheon, "that massive electronics plant that dominates our local scene. It is exhilarating to have a member of '28 a full-fledged engineer" (Hart 1953). But in 1954, she resigned to accept the position as Editor for the M.I.T. Research Laboratory of Electronics (R.L.E.), from which she retired in 1971 as Head of the Publications Office (Hewitt and Thomas 1971). In a condolence letter dated August 13, 1997, Jonathan Allen, then Director of the Research Laboratory of Electronics, wrote Roger Thomas that he had known Dr. Thomas when he was a graduate student and subsequently a faculty member. He wrote (Allen 1997), "During the time your mother was director of publications, many doctoral theses were also [*i.e.*, in addition to R.L.E.'s

Quarterly Progress Reports] published by the laboratory as R.L.E. technical reports.... Inevitably, these technical reports were subject to your mother's strong editorial hand.... Your mother was one of those individuals who left a lasting impression on the people with whom she worked. None who met her will soon forget her contributions."

In 1991, an interviewer, William Aspray, asked her to compare her jobs at the M.I.T. Radiation Laboratory and at Raytheon. She replied that at M.I.T. "people were allowed to experiment," whereas at Raytheon, "where the profit motive intervenes, you had great rivalry between groups" (Aspray 1991).

When Helen began her graduate work in the Department of the History of Science she had been forewarned that it would be difficult for her to get a job in that field. Even her superior at M.I.T., Henry Guerlac, also one of Sarton's early students, had switched from History of Science to straight History for the same reason. Later, in 1986, Helen cheerfully commented as follows in the *Newsletter* of the History of Science Society: "One thing that makes me very happy is to see the many women (and men) in fine positions concerned with the history of science. I was told when I began research that I would never get a job in history of science, but I had to pursue it anyway" (Thomas 1986). In whatever aspect of scholarly work she participated, Helen was outstandingly successful.

6. *The Guinness Book of World Records*

Perhaps the most spectacular success in Helen Thomas' career was an award she received in 1986. Thirty years before, Trans World Airlines held a competition called *Cosmic Contest*. Whoever could most accurately predict the state of air travel 30 years into the future would then win a substantial prize. Among some 13,000 contestants Helen was the winner of the $50,000 prize! The President of TWA, Richard D. Pearson (*New York Times*, 1986), characterized as amazing her extraordinary foresight in 1955 in making predictions on range, cruising speed, passenger capacity, and that the planes would be powered by what are now described as jet engines (Gladstone 1986). At the award ceremonies in New York, which were broadcast worldwide, she was asked to make predictions for the next 30 years, but she declined, saying, "No—please let me retire gracefully." For the accuracy of her predictions, she has been listed in the 1987 edition of the *Guinness Book of World Records* (Russell and McWhiter 1987).

7. Harvard–Yale games

Apart from her scholarly and professional achievements, Helen was a strong advocate of football. In 1995 she wrote, "I attended the Harvard-Yale football game in New Haven and saw the most exciting game I have ever seen, accompanied by Lefty [her son] and grandson Donald. I could not have gone without them. Football (college) is my second religion. I don't feel 90 years of age" (Thomas 1995). Her son reports that even the most atrocious weather could not keep her away from outdoor viewing at that age! And her grandson, Donald, at the memorial services at Christ Church, Cambridge, cited her courage and determination. When he found himself facing a difficult situation those thoughts inspired him to do better, concluding, "I found Grammie's courage was contagious" (D. M. Thomas 1997).

8. Class of 1928 Secretary for 20 years

Helen Lewis Thomas was a lady of determination, strong convictions, and firm adherence to accuracy whether in grammar, spelling, or presentation of facts—qualifications of especial importance for editors. Her classmates marvelled at her versatility and array of accomplishments—especially in science—remarkable for a young woman who had majored in government as an undergraduate (Hart 1953).

Figure 1. Helen Meriwether Lewis Thomas, (1905-1997), taken June 1984. Photo courtesy of D. Hoffleit.

After her retirement she wrote, "I have revived a long-neglected study of Arabic" (Magie 1982), reminiscent of her Ph.D. thesis work 44 years before. For the last 20 years of her life she was Secretary for the Radcliffe Class of 1928, keeping up to date records on the accomplishments and activities of her classmates. Her son fully appreciated her major concern for his own well being while fulfilling all her commitments. He graduated from Princeton and the University of Virginia Law School, and is a lawyer in Boston. His two children, Helen and Donald, were the greatest joys of "Grammie's" elderly years. At her 50th Radcliffe Reunion she cited them as her "Hobbies and Consuming Interests."

Helen had hoped to attend her 70th reunion at Radcliffe in June, 1998. This article is intended as a memorial to her at that reunion.

9. Mysterious lineage

Is it possible that Helen Lewis Thomas was distantly related to Meriwether Lewis of the famous Lewis and Clark Expedition? As Meriwether Lewis was not married (Dillon 1965), could Helen's direct ancestor be Reuben Lewis, younger brother of the explorer? As both Helen and her mother had been divorced, the connection, if any, seems to have been lost.

10. Acknowledgement

I am deeply indebted to Roger M. Thomas, Esq., for supplying information on his mother to which I would otherwise not have had access. Moreover, he graciously read a preliminary version of my manuscript and proffered welcome editorial assistance.

Margaret W. Rossiter, Editor of *Isis, the Journal of the History of Science*, invited me to write a brief éloge on Helen Lewis Thomas, thereby inspiring this more detailed biographical sketch of a dear classmate, colleague, and friend.

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