Women in Astronomy: An Introductory Resource Guide to Materials in English

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This guide is not meant to be a comprehensive or scholarly introduction to the complex topic of the role of women in astronomy, but simply a resource for those educators and students who wish to explore the challenges and triumphs of women of the past and present. It's also an opportunity to get to know some of the key women who have overcome prejudice and exclusion to make significant contributions to our field. To be included among the representative women

opportunity to get to know some of the key women who have overcome prejudice and exclusion to make significant contributions to our field. To be included among the representative women for whom we list individual resources, an astronomer must have had something non-technical about her life and work published in a popular-level journal or book. This explains why so many talented women are not covered; their work is mainly known through journals that students cannot read. Suggestions for additional non-technical listings are most welcome, however.

1. Written Resources on the General Topic of Women in Astronomy

- Armstrong, Mabel *Women Astronomers: Reaching for the Stars*. 2008, Stone Pine Press. Covers the lives and careers of 21 women astronomers, past and present, for teenagers and up.
- Barlow, Nadine, et al. "Women in Astronomy: A Sampler of Issues and Ideas" in *Mercury (the magazine of the Astronomical Society of the Pacific)*, Jan/Feb. 1992, p. 27. Ten pages of quotes, commentary, problems, and solutions; part of a special issue of the magazine, devoted to the role of women in the field.
- Dobson, Andrea & Bracher, Katherine "Urania's Heritage: A Historical Introduction to Women in Astronomy" in *Mercury*, Jan/Feb. 1992, p. 4. A good review of the roles women played.
- Ghez, Andrea & Cohen, Judith *You Can Be a Woman Astronomer*. 2006, Cascade Press. A picture book for children from grades 3 5.
- James, C. "Edward and Mina" in *Astronomy*, July 2002, p. 46. Despite the title, this treats several women who worked at the Harvard Observatory.
- Kidwell, Peggy "Women Astronomers in Britain" in Isis, Sep. 1984, vol. 75, p. 534.
- Lankford, John "Science and Gender: Women in the American Astronomical Community" in his *American Astronomy*. 1997, U. of Chicago Press. 72-page sociological overview, with statistics.
- Lankford, J. & Slavings, R. "Gender and Science: Women in American Astronomy 1859-1940" in *Physics Today*, Mar. 1990, vol. 43, p. 58.
- Mack, P. "Straying from Their Orbits: Women in Astronomy in America" in G. Kass-Simon & P. Farnes, eds. *Women of Science*. 1990, Indiana U. Press.
- Mack, P. "Strategies and Compromises: Women in Astronomy at Harvard College Observatory" in *Journal for the History of Astronomy*, vol. 21, p. 65 (1990).
- McKenna-Lawlor, Susan *Whatever Shines Should be Observed.* 2003, Springer. The story of five 19th century women who made contributions to astronomy and science; too bad the price from the publisher is inappropriately high for a popular book.
- Rizzo, P. "Early Daughters of Urania" in Sky & Telescope, Nov. 1954, p. 7.

Rubin, Vera "Women's Work: Women in Modern Astronomy" in *Science 86*, Jul/Aug. 1986, p. 58. Spradley, J. "Women and the Stars" in *The Physics Teacher*, Sep. 1990, p. 372.

Urry, C. Megan, et al, eds. *Women in Astronomy: Proceedings of a 1992 Workshop*. 1993, Space Telescope Science Institute.

Warner, Deborah "Women Astronomers" in Natural History, May 1979, p. 12.

2. Web Resources on the General Topic of Women in Astronomy_

American Astronomical Society Committee on the Status of Women: www.aas.org/~cswa/ A rich site with back issues of the valuable "Status" newsletter, a database of living women astronomers, legal resources, conference proceedings, and discussion of issues related to the role of professional women in the field.

Bibliography by Ruth Freitag: http://www.loc.gov/rr/scitech/womenastro/womenastro-intro.html
A far more comprehensive and scholarly bibliography, organized by last name, of written articles on women in astronomy. Ruth Freitag's work was the early inspiration for the resource guide you are reading.

Contributions of Women to the U.S. Naval Observatory:

http://maia.usno.navy.mil/women_history/history.html

A paper by Merri Sue Carter on some rather obscure women astronomers who worked at the observatory before 1920.

4000 Years of Women in Science: http://www.astr.ua.edu/4000WS/

Maintained by two women astronomers, this site includes brief information on women from many fields of science, not just astronomy. Their site ends with the start of the 20^{th} century, but see also the much shorter "Contributions of 20^{th} Century Women to Physics" at: http://cwp.library.ucla.edu/

History of Women in Astronomy: http://astro.berkeley.edu/~gmarcy/women/history.html
The text and images from a slide set on women astronomers available from the Astronomical Society of the Pacific. Includes capsule biographies of women from Carolyn Herschel to Sidney Wolff.

The Woman Astronomer: http://www.womanastronomer.com/

Debra Davis, a Colorado amateur astronomer, keeps this site and newsletter devoted to both amateurs and professionals.

Women of NASA: http://quest.nasa.gov/women/WON.html

Profiles of women who work for the US Space Agency, including a number of astronomers and astrobiologists. The profiles include personal statements that can be quite moving and inspiring.

Women at Work: A Meeting on the Status of Women in Astronomy:

http://www.stsci.edu/institute/conference/wia/

Proceedings of a pioneering 1992 meeting with useful local and national perspectives.

3. Material on Some Specific Women Astronomers of the Past_

Cannon, Annie (1863-1941)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Cannon.

- Bok, Priscilla "Annie Jump Cannon 1863-1941" in *Publications of the Astronomical Society of the Pacific*, June 1941, vol. 53, p. 168.
- Camp, Carole *American Astronomers: Searchers and Wonderers.* 1996, Enslow. One chapter of this book for teen readers is devoted to Canon's life and work.
- Emberlin, D. *Science: Contributions of Women*. 1977, Dillon Press. Includes a section on Cannon, pp. 7-27.
- Greenstein, George "The Ladies of Observatory Hill" in *American Scholar*, Feb. 1993, p. 437. (Reprinted in his book *Portraits of Discovery*, 1998, John Wiley.)
- Hearnshaw, John *The Analysis of Starlight*. 1986, Cambridge U. Press. See Chapter 5.
- Jones, Bessie & Boyd, Lyle *The Harvard College Observatory* (1839-1919). 1971, Harvard U. Press. See especially Chapter 11.
- Kidwell, P. "Three Women of American Astronomy" in American Scientist, May/June 1990, p. 244.
- Merrill, P. "Annie Jump Cannon" in *Monthly Notices of the Royal Astronomical Society*, vol. 102, no. 2, p. 74 (1942).
- Welther, Barbara "Annie J. Cannon: Classifier of the Stars" in *Mercury (the magazine of the Astronomical Society of the Pacific)*, Jan/Feb. 1984, p. 28.

Web Sites:

Annie Cannon Pages at Wellesley College: http://www.wellesley.edu/Astronomy/Annie/ Part of a student project, but with good local historical information.

Brief Biography at ScienceWomen Site: http://www.sdsc.edu/ScienceWomen/cannon.html

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://cannon.sfsu.edu/~gmarcy/cswa/history/cannon.html

Video about Cannon's life and work: http://cfa-www.harvard.edu/~alexg/ajc.html

Clerke, Agnes (1842-1907)

Bruck, M. "Agnes Mary Clerke: Chronicler of Astronomy" in *Quarterly Journal of the Royal Astronomical Society*, Mar. 1994, p. 59. Lengthy profile.

Bruck, Mary Agnes Mary Clerke & the Rise of Astrophysics. 2002, Cambridge U. Press.

Cliver, Edward "Agnes Mary Clerke: Real Time Historian of Astronomy" in *Astronomy & Geophysics (the magazine of the Royal Astronomical Society)*, June 2007, vol. 48, p. 3.25.

- Lightman, B. "Constructing Victorian Heavens: Agnes Clerke and the "New Astronomy" in *Natural Eloquence: Women Reinscribe Science*. Barbara T. Gates, Barbara & Shteir, Ann, eds. 1997, U. of Wisconsin Press.
- McKenna-Lawlor, Susan *Whatever Shines Should be Observed.* 2003, Springer. The story of five 19th century women who made contributions to astronomy and science, including Clerke.
- Weitzenhoffer, Kenneth "The Prolific Pen of Agnes Clerke" in Sky & Telescope, Sep. 1985, p. 211.

Web Sites:

Brief Biography from the Catholic Encyclopedia: http://www.newadvent.org/cathen/04051b.htm Brief Biography at Ask about Ireland:

http://www.askaboutireland.ie/show_narrative_page_by_place.do?page_id=6864

Fleming, Williamina (1857-1911)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Fleming.

Camp, Carole *American Astronomers: Searchers and Wonderers.* 1996, Enslow. One chapter of this book for teen readers is devoted to Fleming's life and work.

Jones, Bessie & Boyd, Lyle *The Harvard College Observatory* (1839-1919). 1971, Harvard U. Press. See several sections of this history for her contributions.

Spradley, J. "The Industrious Mrs. Fleming" in Astronomy, July 1990, p. 48.

Spradley, J. "Two Centennials of Star Catalogs Compiled by Women" in *Astronomy Quarterly*, vol. 7, no. 3, p. 177 (1990).

Web Sites:

Brief biography at about.com: http://space.about.com/od/astronomerbiographies/a/wflemingbio.htm
Brief biography at Harvard Women Working site:

http://ocp.hul.harvard.edu/ww/people_fleming.html

Brief biography at Woman Astronomer site: http://www.womanastronomer.com/wfleming.htm

Herschel, Caroline (1750-1848)

Alic, Margaret *Hypatia's Heritage: A History of Women in Science*. 1986, Beacon Press. Chapter 9 has a good section on Herschel's work.

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Herschel.

Belkora, Leila *Minding the Heavens: The Story of Our Discovery of the Milky Way.* 2003, IOP Publishing. Chapter 4 is about the Herschels.

Brock, Claire *The Comet Sweeper: Caroline Herschel's Astronomical Ambition.* 2008, Totem Books. A popular-level biography. A radio program interviewing the author can be found at the end of the web sites below.

Higgins, F. Sweeper of the Skies: Caroline Herschel. 1967, Follett. For young people.

Hoskin, Michael "Astronomy's Matriarch" in Sky & Telescope, May 2005, p. 42-46.

Hoskin, Michael, ed. *Caroline Herschel's Autobiographies*. 2003, Science History Publications. Annotated versions of the autobiographies she wrote in her 70's and 90's.

Hughes, D. "Caroline Herschel: Comet Huntress" in *Journal of the British Astronomical Association*, Apr. 1999, vol. 109, p. 78.

Lubbock, C. *The Herschel Chronicle*. 1933, Cambridge U. Press. Family chronicle of William and Caroline, by his grand-daughter.

Ogilvie, M. "Caroline Herschel's Contributions to Astronomy" in *Annals of Science*, vol. 32, p. 149 (1975).

Web Sites:

Biography at MacTutor Site:

http://www-groups.dcs.st-and.ac.uk/~history/Biographies/Herschel_Caroline.html

Brief biography at FemBio:

http://www.fembio.org/english/biography.php/woman/biography/caroline-herschel

Brief biography at Cometography site: http://cometography.com/biographies/herschelc.html

Maria Mitchell's Reminiscences about Caroline Herschel from 1889:

http://womenshistory.about.com/library/etext/bl_mitchell_herschel.htm

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/herschel.html

Brief Biography at the Space Telescope Science Institute:

http://amazing-space.stsci.edu/resources/explorations//groundup/lesson/bios/herschel/index.php

Flanders, Tony "Following in Caroline Herschel's Footsteps" (a guide to re-observing some of the objects she saw, for amateurs):

http://www.skyandtelescope.com/observing/Caroline_Herschel_Objects.html

March 2007 BBC radio program about her:

http://www.bbc.co.uk/radio4/womanshour/03/2007_11_thu.shtml

Hoffleit, Dorrit (1907 - 2007)

Hoffleit, Dorrit "Some Glimpses from My Career" in *Mercury* (the magazine of the Astronomical Society of the Pacific), Jan/Feb. 1992, p. 16.

Hoffleit, Dorrit *Misfortunes as Blessings in Disguise*. 2002, American Association of Variable Star Observers. Her autobiography. See excerpts and purchasing information at: http://www.aavso.org/store/st dorrit.shtml

Levy, David "Astronomy's First Lady" in Sky & Telescope, Feb. 1999, p. 89.

Philip, A.G. D., et al, eds. *Anni Mirabiles: A Symposium Celebrating the 90th Birthday of Dorrit Hoffleit*. 1999, L. Davis Press.

Web Sites:

Brief Biography at AAVSO site: http://www.aavso.org/aavso/membership/dhoffleit.shtml Obituary by Virginia Trimble: http://adsabs.harvard.edu/abs/2007BAAS...39.1067T July 2006 Interview with Pamela Gay (video):

http://www.starstryder.com/2007/04/11/dorrit-hoffleit-1907-2007/

Hogg, Helen Sawyer (1905-1993)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Hogg.

Morrison, David & Fraknoi, Andrew "1983 ASP Award Winners: Klumpke Roberts Award to Helen Sawyer Hogg" in *Mercury (the magazine of the Astronomical Society of the Pacific)*, Nov/Dec. 1983, p. 185.

Webb, M. *Helen Sawyer Hogg: A Lifetime of Stargazing*. 1991, Copp Clark Pitman (Toronto). Yost, E. *Women of Modern Science*. 1959, Greenwood Press. Pp. 31-47 are on Helen Hogg.

Web Sites:

Obituary from the Journal of the Royal Astronomical Society of the Canada:

http://www.astro.utoronto.ca/hsh/hshrasc.html

Obituary from the *Publications of the Astronomical Society of the Pacific:*

http://www.astro.utoronto.ca/hsh/hshpasp.html

Brief Biography at Science Women Site: http://www.sdsc.edu/ScienceWomen/hogg.html

Her career highlights summary at U. of Toronto: http://www.astro.utoronto.ca/hsh/hshhigh.html

Talk about her by Tom Bolton: http://www.astro.utoronto.ca/hsh/hshbln.html

Brief Biography at Canada Under the Stars: http://astro-canada.ca/en/a2206.html

Transcript of an Interview with David DeVorkin at the Center for the History of Physics:

http://www.aip.org/history/ohilist/4679.html

Very brief autobiography at the Canada Science & Technology Museum:

http://www.sciencetech.technomuses.ca/english/about/hallfame/u_i33_e.cfm

Huggins, Margaret (1848-1916)

Becker, Barbara "Dispelling the Myth of the Able Assistant: Margaret and William Huggins at Work in the Tulse Hill Observatory" in Helena Pycior, et al. eds., *Creative Couples in the Sciences*. 1996, Rutgers University Press.

Belkora, Leila *Minding the Heavens: The Story of Our Discovery of the Milky Way.* 2003, IOP Publishing. Chapter 6 is about the Hugginses.

Bruck, Mary *Agnes Mary Clerke & the Rise of Astrophysics*. 2002, Cambridge U. Press. See Chapter 5 and several other sections about Margaret Huggins' work and relationship with Clerke.

McKenna-Lawlor, Susan *Whatever Shines Should be Observed*. 2003, Springer. The story of five 19th century women who made contributions to astronomy and science, including Huggins. Richardson, Robert "Lady Huggins" in *The Star Lovers*. 1967, Macmillan.

Web Site:

Barbara Becker's article: https://eee.uci.edu/clients/bjbecker/ExploringtheCosmos/week7b.html

Leavitt, Henrietta (1868-1921)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars*. 2008, Stone Pine Press. This book for teens has a chapter on Leavitt.

Crowe, Michael *Modern Theories of the Universe from Herschel to Hubble*. 1994, Dover. See especially Chapter 6.

Ferguson, Kitty *Measuring the Universe*. 1999, Walker. Chronicle of how distances were found in the universe, with good discussions of contributions by individual astronomers.

Johnson, George Miss Leavitt's Stars: The Untold Story of the Woman Who Discovered How to Measure the Universe. 2005, Atlas/Norton.

Jones, Bessie & Boyd, Lyle *The Harvard College Observatory* (1839-1919). 1971, Harvard U. Press. See Chapters 10 and 11.

Mitchell, H. "Henrietta Leavitt and the Cepheid Variables" in *The Physics Teacher*, Mar. 1976, vol. 14, p. 162.

Moore, Patrick *Astronomers' Stars*. 1987, Norton. Chapter 10 concerns Leavitt's work on Cepheids. Richardson, Robert "Henrietta Leavitt" in *The Star Lovers*. 1967, Macmillan.

Singh, Simon Big Bang. 2004, Harper. Chapter 3 has a nice section on her life and work.

Web Sites:

Biography at AAVSO Site: http://hoa.aavso.org/posterswan.htm

Brief Biography at PBS Science Odyssey:

http://www.pbs.org/wgbh/aso/databank/entries/baleav.html

Brief Biography at Woman Astronomer Site: http://www.womanastronomer.com/hleavitt.htm

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/leavitt.html

Maury, Antonia (1866-1952)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars*. 2008, Stone Pine Press. This book for teens has a chapter on Maury.

Hearnshaw, John *The Analysis of Starlight*. 1986, Cambridge U. Press. See Chapter 5.

Hoffleit, Dorrit "Antonia Maury" in Sky & Telescope, Mar. 1952, p. 106.

Jones, Bessie & Boyd, Lyle *The Harvard College Observatory* (1839-1919). 1971, Harvard U. Press. See Chapter 5 and 11 on Maury's work with spectra.

Web Site:

Biography on the Woman Astronomer site: http://www.womanastronomer.com/amaury.htm

Mitchell, Maria (1818-1889)

Albers, Henry, ed. *Maria Mitchell: A Life in Journals and Letters*. 2001, College Avenue Press. Many excerpts from her writings, interspersed with biographical information.

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Mitchell.

Belserene, Emelia "Maria Mitchell: 19th Century Astronomer" in *Astronomy Quarterly*, vol. 5, no. 19, p. 133 (1986).

Camp, Carole *American Astronomers: Searchers and Wonderers.* 1996, Enslow. One chapter of this book for teen readers is devoted to Mitchell's life and work.

Gormley, Beatrice *Maria Mitchell: The Soul of an Astronomer*. 1995, Eerdmans Publishing. A book for youngsters.

Kidwell, P. "Three Women of American Astronomy" in *American Scientist*, May/June 1990, p. 244. Kohlstedt, S. "Maria Mitchell and the Advancement of Women in Science" in P. Abir-Am &

Outram, D., eds. *Uneasy Careers and Intimate Lives: Women in Science 1789-1979*. 1987, Rutgers U. Press.

Matyas, C. "Maria Mitchell: First Woman Astronomer in America" in *Science Digest*, Aug. 1961, vol. 50, no. 8, p. 51.

McPherson, Stephanie *Rooftop Astronomer: A Story about Maria Mitchell.* 1990, CarolRhoda Books. For younger children.

Merriam, Eve, ed. *Growing Up Female in America: Ten Lives*. 1971, Doubleday. Has excerpts from Mitchell's diary in the section about her (pp. 75-92).

Morgan, Helen Maria Mitchell: First Lady of American Astronomy. 1977, Westminster. For children.

Opalko, J. "Maria Mitchells' Haunting Legacy" in Sky & Telescope, May 1992, p. 505.

Wright, Helen *Sweeper in the Sky: The Life of Maria Mitchell*. 1950, Macmillan. (Recently updated and reprinted by College Avenue Press.)

Web Sites:

Brief Biography at Distinguished Women Web Site:

http://www.distinguishedwomen.com/biographies/mitchell.html

Brief biography at the Maria Mitchell House Preservation Web Site:

http://www.nps.gov/history/nr/travel/pwwmh/ma74.htm

Brief Biography at Women Working Web Site: http://ocp.hul.harvard.edu/ww/people_mitchell.html Harriet Townsend's 1916 Reminiscences about her:

http://womenshistory.about.com/library/etext/bl_townsend_mitchell.htm

An 1889 Letter from one of her Students at the Time of her Death:

http://womenshistory.about.com/library/etext/bl maria mitchell.htm

An 1886 Profile: http://www.female-ancestors.com/daughters/mitchell.htm

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/mitchell.html

Her Entry in the Vassar Encylopedia: http://vcencyclopedia.vassar.edu/index.php/Maria Mitchell

Payne-Gaposchkin, Cecilia (1900-1979)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars*. 2008, Stone Pine Press. This book for teens has a chapter on Payne-Gaposchkin.

Bartusiak, Marcia "The Stuff of the Stars" in *The Sciences*, Sep/Oct. 1993, p. 34. Excerpt on her work from Bartusiak's book, *Through a Universe Darkly* (1993, HarperCollins.)

Camp, Carole *American Astronomers: Searchers and Wonderers.* 1996, Enslow. One chapter of this book for teen readers is devoted to her life and work.

Gingerich, Owen "The Most Brilliant Phd Thesis Ever Written in Astronomy" in Phillip, A. & Koopman, R., eds. *The Starry Universe: The Cecilia Payne-Gaposchkin Centenary*. 2001, L. Davis Press. Article is on the web at:

http://www.harvardsquarelibrary.org/unitarians/payne2.html

Greenstein, George "The Ladies of Observatory Hill" in *American Scholar*, Feb. 1993, p. 437. (Reprinted in his book *Portraits of Discovery*, 1998, John Wiley.)

Haramundanis, Katherine, ed. *Cecilia Payne Gaposchkin: An Autobiography and Notes*, 2nd ed. 1996, Cambridge U. Press.

Hearnshaw, John *The Analysis of Starlight*. 1986, Cambridge U. Press. See Chapter 2.

Hufbauer, Karl *Exploring the Sun.* 1991, Johns Hopkins. Chapter 3 discusses Payne's work, among others.

Kidwell, Peggy "Cecilia Payne-Gaposchkin: Astronomy in the Family" in P. Abir-Am & Outram, D., eds. *Uneasy Careers and Intimate Lives: Women in Science 1789-1979*. 1987, Rutgers U. Press.

Kidwell, Peggy "Three Women of American Astronomy" in *American Scientist*, May/June 1990, p. 244.

Smith, E. "Cecilia Payne-Gaposchkin" in *Physics Today*, June 1980, p. 64.

Soter, Steven & Tyson, Neil, eds. Cosmic Horizons. 2001, New Press. See p. 75ff

Whitney, Charles "Cecilia Payne-Gaposchkin: An Astronomer's Astronomer" in *Sky & Telescope*, Mar. 1980, p. 212.

Web Sites:

Brief Biography at Harvard Square Library Page:

http://www.harvardsquarelibrary.org/unitarians/cpg.html

Two Excellent Articles on her Work and Life:

http://www.harvardsquarelibrary.org/unitarians/payne2.html

Biographical Outline at UCLA Contributions of Women to Physics Page:

http://www.physics.ucla.edu/~cwp/Phase2/Payne-

Gaposchkin, Cecilia_Helena@861234567.html

Brief Biography and Story of her Centenary Celebrations:

http://www.aavso.org/publications/newsletter/number25/cecilia.shtml

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/cecilia.html

Roberts, Dorothea Klumpke (1861-1942)

Aitken, Robert "Dorothea Klumpke Roberts" in *Publications of the Astronomical Society of the Pacific*, Dec. 1942, vol. 54, p. 217.

Bracher, Katherine "Dorothea Klumpke Roberts: A Forgotten Astronomer" in *Mercury*, Sep/Oct. 1981, p. 139.

Reynolds, J. "Dorothea Klumpke Roberts" in *Monthly Notices of the Royal Astronomical Society*, vol. 104, no. 2, p. 92 (1944).

Weitzenhoffer, Kenneth "The Triumph of Dorothea Klumpke" in *Sky & Telescope*, Aug. 1986, p. 109.

Web Sites:

Biography by Don Stone: http://www.aanc-astronomy.org/articles/dorothea.html
About her Pioneering Balloon Flights: http://leonids.arc.nasa.gov/Klumpke.html and http://leonids.arc.nasa.gov/Klumpke.html and http://www.whiteoaks.com/jane/leonidklumpke/dorothea.txt

Brief Biography on SMSO site: http://www.smso.net/Dorothea_Klumpke-Roberts

Sitterly, Charlotte Moore (1898-1990)

- Garton, W. & Martin, W. "Obituary for C. M. Sitterly" in *Quarterly Journal of the Royal Astronomical Society*, vol. 32, pp. 209-10 (1991).
- Martin, W. "Charlotte Sitterly" in *Physics Today*, vol. 44, p. 128 (Apr. 1991).
- Morrison, Nancy & Fraknoi, Andrew "The Award of the 1990 Bruce Medal to Charlotte Moore Sitterly" in *Mercury (the magazine of the Astronomical Society of the Pacific)*, Nov/Dec. 1990, p. 179.
- Sitterly, Charlotte Moore, "Collaboration with Henry Norris Russell over the Years," in Philip, A.G. Davis & David H. DeVorkin, eds., *In Memory of Henry Norris Russell*. 1977, Dudley Observatory, pp. 27-41.
- Tousey, R. "The Solar Spectrum from Fraunhofer to Skylab: An Appreciation of the Contributions of Charlotte Moore Sitterly" in *Journal of the Optical Society of America, Series B*, vol. 5, p. 2230 (Oct. 1988).

Web Sites:

Profile connected with the Bruce Medal:

http://www.phys-astro.sonoma.edu/BruceMedalists/Sitterly/index.html

Biography on Answers.com: http://www.answers.com/topic/charlotte-e-moore

Brief Biography from the World Encyclopedia of Biography:

http://www.bookrags.com/biography/charlotte-e-moore/

Obituary from *Physics Today:*

http://ptonline.aip.org/getpdf/servlet/GetPDFServlet?filetype=pdf&id=PHTOAD00004400000 4000128000001&idtype=cvips

Obituary from the *Bulletin of the American Astronomical Society*: http://adsbit.harvard.edu/cgibin/nph-iarticle_query?bibcode=1991BAAS...23.1492R

Somerville, Mary (1780-1872)

- Alic, Margaret *Hypatia's Heritage: A History of Women in Science*. 1986, Beacon Press. Chapter 12 has a good section on her work.
- Bruck, M. "Mary Somerville: Mathematician and Astronomer of Underused Talent" in *Journal of the British Astronomical Association*, Aug. 1996, vol. 106, p. 201.
- Chapman, Allan *The Victorian Amateur Astronomer*. 1998, Wiley/Praxis. See especially pp. 276ff. Chapman, Allan *Mary Somerville and the World of Science*. 2004, Canopus Books.
- Neeley, Kathryn *Mary Somerville: Science, Illumination, and the Female Mind.* 2001, Cambridge University Press.
- Patterson, E. "Mary Somerville" in *British Journal for the History of Science*, vol. 4, p. 311 (1969). Long profile.
- Weitzenhoffer, Kenneth "The Education of Mary Somerville" in *Sky & Telescope*, Feb. 1987, p. 138.

Web Sites:

Biography at About.com: http://space.about.com/od/astronomerbiographies/a/marysomerville.htm
Biography at Mac Tutor: http://www-history.mcs.st-andrews.ac.uk/Biographies/Somerville.html
From Biographies of Women Mathematicians:

http://www.agnesscott.edu/lriddle/women/somer.htm

Bruck's Article (see above) on line:

http://adsbit.harvard.edu/cgi-bin/nph-iarticle_query?bibcode=1996JBAA..106..201B

Brief Biography at Women in Math:

http://www.mathnews.uwaterloo.ca/BestOf/WomenInMath7105.html

Brief Biography at Burntisland Site: http://www.burntisland.net/mabon.htm

BBC Radio Program about her, with Allan Chapman (audio):

http://www.bbc.co.uk/radio4/science/thematerialworld_20040826.shtml

Interesting essay by Paula Gould from *Science*, wondering if her life story (and Caroline Herschel's has been whitewashed by history:

http://www.sciencemag.org/cgi/content/full/sci;296/5574/1805

Transcript of a brief broadcast about her on Australian radio:

http://www.abc.net.au/rn/science/ockham/stories/s306256.htm

Tinsley, Beatrice (1941-1981)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Tinsley.

Eisberg, Joann "Making a Science of Observational Cosmology: The Cautious Optimism of Beatrice Tinsley" in *Journal for the History of Astronomy*, vol. 32, p. 264 (2001).

Faber, Sandra "Beatrice Tinsley" in *Physics Today*, vol. 34, p. 110 (Sept. 1981).

Hill, Edward My Daughter Beatrice. 1986, American Physical Society.

Larson, R. & Stryker, L. "Beatrice Hill Tinsley" in *Quarterly Journal of the Royal Astronomical Society*, vol. 23, p. 162 (1982).

Overbye, Dennis *Lonely Hearts of the Cosmos*. 1992, HarperCollins. An introduction to modern cosmology; material on Tinsley is in Chapter 10.

Trimble, Virginia "Beatrice Tinsley" in *Visit to a Small Universe*. 1992, American Institute of Physics Press.

Web Sites:

Biography by Virginia Trimble (pdf file): http://www.ias.ac.in/womeninscience/Tinsley.pdf

Biography at New Zealand Edge page: http://www.nzedge.com/heroes/tinsley.html

Biography by Michele Nichols on Carleton College site:

http://www.carleton.edu/departments/PHAS/astro/pages/michele/tinsley.html

Paper about her life and work by Margaret Turner:

http://freepages.misc.rootsweb.ancestry.com/~mturner/women/bmt.htm

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/tinsley.html

Eisberg article (see above): http://www.shpltd.co.uk/eisberg-tinsley.pdf

4. Material on Some Specific Living Astronomers who are Women

Bell Burnell, Jocelyn (1943 -)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Bell Burnell.

Bell Burnell, Jocelyn "Little Green Men, White Dwarfs, or What?" in *Sky & Telescope*, Mar. 1978, p. 218.

Bell Brunell, Jocelyn "So Few Pulsars, So Few Females" in *Science*, 23 April 2004, vol. 304. no. 5670, p. 489. (On line at: http://www.sciencemag.org/cgi/content/summary/304/5670/489)

Greenstein, George "Neutron Stars and the Discovery of Pulsars" in *Mercury (the magazine of the Astronomical Society of the Pacific)*, Mar/Apr. 1985, p. 34 and May/June 1985, p. 66.

Reed G. "The Discovery of Pulsars: Was Credit Given Where it was Due?" in *Astronomy*, Dec. 1983, p. 24.

Wade, N. "Discovery of Pulsars: A Graduate Student's Story" in Science, Aug. 1, 1975, p. 358.

Web Sites:

Citation and Interview when she was Elected a Fellow of the Royal Society:

http://royalsociety.org/page.asp?tip=1&id=1481

Interview on the BBC Program *Belief* (both about her religious view and her science):

http://www.bbc.co.uk/religion/programmes/belief/scripts/jocelyn_bell_burnell.html

Her talk on Astronomy and Poetry at the University of Bath:

http://www.podcastdirectory.com/podshows/993144

Royal Institution (Public) Discourse in 1997 ("Tick Tick Pulsating Star") by Bell Burnell: http://www.vega.org.uk/video/programme/69 (a video)

Brief biography at the Contributions of Women to Physics Site:

http://cwp.library.ucla.edu/Phase2/Burnell, Jocelyn_Bell@841234567.html

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/burnell.html

Brief Bio at Project NOVA site from California State U. at Pomona:

http://www.csupomona.edu/~nova/scientists/articles/burn.html

1977 After-dinner Speech about her Discovery of Pulsars (text):

http://www.bigear.org/vol1no1/burnell.htm

Encyclopedia of World Biography Entry:

http://www.gale.cengage.com/free resources/whm/bio/bellburnell s.htm

Arp, Halton & Fraknoi, Andrew "The Award of the 1982 Bruce Medal to Margaret Burbidge" in *Mercury (the magazine of the Astronomical Society of the Pacific)*, Sep/Oct. 1982, p. 154.

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Burbidge.

Burbidge, Margaret "Watcher of the Skies" in *Annual Reviews of Astronomy & Astrophysics*, 1994, vol. 32, p. 1 (An auto-biographical article in a technical volume; available on line at: http://adsbit.harvard.edu/cgi-bin/nph-iarticle_query?bibcode=1994ARA%26A..32....1B)

Croswell, Ken *The Alchemy of the Heavens: Searching for Meaning in the Milky Way.* 1995, Doubleday. See Chapter 9.

Reed, J. "A Great Woman Astronomer Leaves England Again" in *Smithsonian*, Jan. 1974, p. 34. Rubin, Vera "Margaret Burbidge: AAAS President-Elect" in *Science*, vol. 211, p. 915 (Feb. 27, 1981). On the web at: http://www.physics.ucla.edu/~cwp/articles/burbidge-rubin.html
"The Stargazer" in *Time* magazine, Mar. 20, 1972, p. 38.

Web Sites:

Bruce Medal Profile: http://www.phys-astro.sonoma.edu/BruceMedalists/BurbidgeM/
Interview with David DeVorkin at the Center for the History of Physics from 1978: http://www.aip.org/history/ohilist/25487.html

Short bio at Contributions of Women to Physics site:

http://www.physics.ucla.edu/~cwp/Phase2/Burbidge,_E._Margaret@932123456.html

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/burbidge.html

Faber, Sandra (1944 -)

Dressler, Alan *Voyage to the Great Attractor*. 1994, Knopf. Story of how we learned to explore the large-scale structure of the realm of the galaxies, focusing on the astronomers who call themselves the "Seven Samurai" (of which Faber is one).

Lemonick, Michael *The Light at the Edge of the Universe*. 1993, Villard/Random House. See especially Chapter 6.

Lightman, Alan & Brawer, Roberta "Interview with Sandra Faber" in *Origins*. 1990, Harvard U. Press.

Web Sites:

Her Web Page at Lick Observatory: http://www.ucolick.org/~board/faculty/faber.html
Interview with Patrick McCray for the Center for the History of Physics 2002: http://www.aip.org/history/ohilist/25489.html

Bio Page at the Contribution of Women to Physics Site at UCLA:

http://www.physics.ucla.edu/~cwp/Phase2/Faber,_Sandra_Moore@931234567.html

1995 Autobiographical Sketch: http://www.physics.ucla.edu/~cwp/articles/faber.htm

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/faber.html

Fischer, Debra (1953 -)

Naeye, Robert "Unlocking New Worlds" in *Astronomy*, Nov. 2002, p. 48. A profile and discussion of her work.

Web Sites:

Her web site at San Francisco State University: http://www.physics.sfsu.edu/~fischer/ Interview at the Woman Astronomer site: http://www.womanastronomer.com/dfischer.htm Her talk on Extra-solar Planets in San Francisco May 2008 (video):

http://fora.tv/2008/05/15/The Search for a World Like Our Own Imagine Earth 20 Her article about finding planets in *Mercury* magazine:

http://www.astrosociety.org/pubs/mercury/0004/fischer.html

Freedman, Wendy (1957 -)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Freedman.

Ferguson, Kitty *Measuring the Universe*. 1999, Walker. Chronicle of how distances were found in the universe, with good discussions of contributions by individual astronomers.

Stephens, Sally "Hubble Warrior" in *Astronomy*, March 2000, p. 52. Profile of her work trying to find the Hubble constant and other cosmological parameters.

Web Sites:

Interview from April 2004, at the National Academy of Sciences (about her life and work):

http://www.nasonline.org/site/PageServer?pagename=INTERVIEWS_Wendy_Freedman

Brief Biography at Women Astronomer site: http://www.womenastronomers.com/star.php?Id=3

Geller, Margaret (1947 -)

Ames, Joan. Mastery: Interviews with 30 Remarkable People. 1997, Rudra Press.

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Geller.

Chaikin, Andrew "Surveyor of the Universe" in Air & Space, Aug./Sept. 1991; vol. 6, p. 84.

Geller, Margaret. "The Big Picture" in Natural History, Feb. 2000, vol. 109, p. 74.

Goldsmith, Donald *The Astronomers*. 1991, St. Martin's Press. The chapter entitled "Mapping the Universe" profiles Geller's life and work.

Greenstein, George *Portraits of Discovery*. 1998, John Wiley. Chapter 8 of this collection of biographical articles is about Margaret Geller and John Huchra.

Lawler, Andrew "Margaret Geller: Battling Discrimination or Bureaucracy?" in *Science*, 12 November 1999; vol. 286. no. 5443, p. 1277.

Lemonick, Michael *The Light at the Edge of the Universe*. 1993, Villard/Random House. See especially Chapter 3.

Lightman, Alan & Brawer, Roberta "Interview with Margaret Geller" in *Origins*. 1990, Harvard U. Press.

Overbye, Dennis Lonely Hearts of the Cosmos. 1992, HarperCollins. See Chapter 19.

Wiley, John "Margaret Geller: Star Mapper" in Astronomy, Nov. 2000; vol. 28. p. 104.

Web Sites:

Her web page at Smithsonian: http://cfa-www.harvard.edu/~mjg/

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/geller.html

Her 1995 Phi Beta Kappa Address at Harvard: http://gos.sbc.edu/g/geller.html

Margaret Geller Giving a Talk on "When Galaxies Collide" (2004, video):

http://streamer.perimeterinstitute.ca/Flash/5071fa3c-293a-4256-8003-20cfb88167ad/index.html

Her poignant essay on Science and Society, "Black Ribbon" from *Science* Magazine (1998): http://www.scienceonline.org/cgi/content/full/281/5381/1278

Ghez, Andrea (1965 -)

Freedman, David "The Mysterious Middle of the Milky Way" in *Discover* Magazine, Nov. 1998. Features her work.

Ghez, Andrea & Cohen, Judith *You Can Be a Woman Astronomer*. 2006, Cascade Press. A picture book for children from grades 3 - 5, includes a discussion of her own beginnings.

Web Sites:

Her web page at UCLA: http://www.astro.ucla.edu/~ghez/

Her 2003 UCLA Faculty Lecture on "Unveiling the Black Hole at the Center of the Galaxy":

http://www.webcast.ucla.edu/Webcast/FRL/Ghez/

Brief story about her on "My Hero" web page:

http://www.myhero.com/myhero/hero.asp?hero=A_M_Ghez_06

Interview with her for the PBS TV Show NOVA in 2006:

http://www.pbs.org/wgbh/nova/blackhole/explorer.html

Interview for ABC's "Science Show":

http://www.abc.net.au/rn/scienceshow/stories/2006/1652905.htm

Brief Biography on the Poster Project Site:

http://www.math.sunysb.edu/posterproject/biographies/ghez.html

Hammel, Heidi (1960 -)

Bortz, Fred: *Beyond Jupiter: The Story of Planetary Astronomer Heidi Hammel* (2005, Franklin Watts/Scholastic & Joseph Henry Press). A colorful profile of Hammel as a person and scientists, written for teenagers (but enjoyable reading for everyone.)

Flanagan, R. "Observer of the Gas Giants" in Astronomy, July 1997, p. 50.

Web Site:

Her web page at the Space Science Institute:

http://www.spacescience.org/about_ssi/staff/hammel.html

Brief answer to what made her become an astronomer and a Field Journal at the NASA Quest Site: http://quest.arc.nasa.gov/hst/people/hammel.html

Her answers to frequently asked questions at the site for the kids' book about her: http://www.fredbortz.com/HammelBio/AstroFAQ.htm

An hour interview of Minnesota Public Radio about the successor telescope to the Hubble and her work: http://minnesota.publicradio.org/display/web/2008/03/05/midmorning2/

Some reminiscences by her sister: http://everything2.com/index.pl?node_id=1373765
Interview about her involvement in education:

iview about her involvement in education.

http://ssibroker.colorado.edu/Rolesmatrix/matrix/element27/hammel_profile.pdf

Her two appearances on the Planetary Society radio program:

http://www.planetary.org/radio/archive/guest/173/

Luu, Jane (1963 -)

Bartusiak, Marcia "The Remarkable Odyssey of Jane Luu" in *Astronomy*, Feb. 1996, p. 46. Davies, John *Beyond Pluto: Exploring the Outer Limits of the Solar System*. Chapter 4 features Luu's life and work.

Flamsteed, Sam ""Where Comets Come from - Hubble Space Telescope Provides Evidence for Kuiper Belt" in *Discover*, Nov. 1995, p. . Includes some about her life and early work.

Web Site:

Interview from 2003 (with a lot of biographical information) at Imagiverse Site: http://www.imagiverse.org/interviews/janeluu/jane luu 21 03 03.htm

Ride, Sally (1951 -)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars*. 2008, Stone Pine Press. This book for teens has a chapter on Ride.

Camp, Carole Sally Ride: First American Woman in Space. 1997, Enslow. For young adults.

Cooper, Henry *Before Lift-off: The Making of a Space Shuttle Crew*. 1987, Johns Hopkins U. Press. The veteran correspondent for *The New Yorker* chronicles the training and flight of the crew for Shuttle Flight 41G, which includes Sally Ride.

Blacknall, Carolyn Sally Ride: America's First Woman in Space. 1984, Dillon Press. A book for youngsters.

Hopping, Lorraine Sally Ride: Space Pioneer. 2000, McGraw Hill. For middle school and up.

Hurwitz, Sue Sally Ride: Shooting for the Stars. 1989, Ballantine. Also a book for kids.

Kramer, Barbara Sally Ride: A Space Biography. 1998, Enslow. Another book for kids.

Nichols, Katherine Sally Ride. 2005, Children's Press. Also for children.

Orr, Tamra *Sally Ride: The First American Woman in Space*. 2003, Rosen Publishing. Part of the Astronaut Biographies series for youngsters.

Raum, Elizabeth Sally Ride. 2005, Heinemann. Part of the "American Lives" series for children.

Web Sites:

Official astronaut biography at NASA: http://www.jsc.nasa.gov/Bios/htmlbios/ride-sk.html

Biography at Sally Ride Science site: http://www.sallyridescience.com/sallyride/bio

Biography at Academy of Achievement Site: http://www.achievement.org/autodoc/page/rid0bio-1

Interview at the same site: http://www.achievement.org/autodoc/page/rid0int-1

Brief on-line chat at NASA Quest:

http://quest.arc.nasa.gov/space/frontiers/chat_archives/ride03-23-99.html

Brief biography at LucidCafe site: http://www.lucidcafe.com/library/96may/ride.html

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/ride.html

Brief Biography at Aerospace Guide:

http://www.aerospaceguide.net/women_in_space/sally_ride.html

Brief Biography at Engineer's Week Site:

http://www.eweek.org/site/news/Eweek/2007_marathon/Ride.shtml

2008 CBS News Special Report on What She is Doing Now (with video):

http://cbs2.com/specialreports/Sally.Ride.NASA.2.659919.html

5-min Video on Her Concerns about Technical Education:

http://video.google.com/videoplay?docid=1996560773716130827

Roman, Nancy (1925 -)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Roman.

Croswell, Ken *The Alchemy of the Heavens: Searching for Meaning in the Milky Way.* 1995, Doubleday. See Chapter 8.

Silver, Lily "Dr. Nancy G. Roman, the Astronomer's Astronomer" in *Profiles in Success: 40 Lives of Achievement.* 1965, Fountainhead Publishers.

Web Sites:

Brief Autobiographical Sketches at NASA Quest:

http://quest.arc.nasa.gov/people/bios/women/nr.html

Her Resume on line: http://www.mc.cc.md.us/Departments/planet/Nancy/Nancy.htm

An excerpt from Armstrong's book section about her:

http://www.womenastronomers.com/roman.htm

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/roman.html

Interview with David DeVorkin at the Center for the History of Physics from 1980:

http://www.aip.org/history/ohilist/4846.html

Bartusiak, Marcia "The Woman Who Spins the Stars" in *Discover*, Oct. 1990, p. 88. See also Bartusiak's book, *Through a Universe Darkly*, 1993, HarperCollins, p. 202ff.

Boslaugh, John *Masters of Time: Cosmology at the End of Innocence*. 1992, Addison-Wesley. Chapter 2 features Rubin's life and work.

Camp, Carole *American Astronomers: Searchers and Wonderers.* 1996, Enslow. One chapter of this book for teen readers is devoted to Rubin's life and work.

Goldsmith, Donald *The Astronomers*. 1991, St. Martins. Chapter 2 profiles Vera Rubin.

Irion, Robert "Vera Rubin Profile: The Bright Face Behind the Dark Sides of Galaxies" in *Science*, vol. 295, no. 5557, p. 960 (Feb. 8, 2002).

Lightman, Alan & Brawer, Roberta "Interview with Vera Rubin" in *Origins*. 1990, Harvard U. Press.

Overbye, Dennis Lonely Hearts of the Cosmos. 1992, HarperCollins. Chapter 17 focuses on her work.

Rubin, Vera "Women's Work: Women in Modern Astronomy" in Science 86, Jul/Aug. 1986, p. 58.

Rubin, Vera *Bright Galaxies, Dark Matters*. 1997, American Institute of Physics Press. A collection of her articles, including several personal reminiscences.

Rubin, Vera "Seeing Dark Matter in the Andromeda Galaxy" in *Physics Today*, Dec. 2006, vol. 59, no. 12, p. 8. (More technical reminiscences.)

Schomaker, William "Interview with Vera Rubin" (very brief) in Astronomy, June 2003, p. 18.

Soter, Steven & Tyson, Neil, eds. Cosmic Horizons. 2001, New Press. See p. 94ff

Stephens, Sally "Vera Rubin: An Unconventional Career" in *Mercury (the magazine of the Astronomical Society of the Pacific)*, Jan/Feb. 1992, p. 38. An interview.

Tucker, Wallace & Karen The Dark Matter. 1988, Morrow. See Chapter 6.

Web Sites:

Brief Biography at the Carnegie Institution: http://www.dtm.ciw.edu/content/view/122/168/
Joe Tenn's Bruce Medalist Profile of her: http://www.phys-

astro.sonoma.edu/BruceMedalists/Rubin/index.html

Brief Biography at the Lake Afton Observatory Women in Astronomy Page:

http://webs.wichita.edu/lapo/vr.htm

Excerpt from the book *Cosmic Horizons*, at the American Museum of Natural History site, about

her work: http://www.amnh.org/education/resources//rfl/web/essaybooks/cosmic/p_rubin.html

2002 Interview in *Discover Magazine*: http://discovermagazine.com/2002/jun/breakdialogue

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/rubin.html

"Telling Stories about the Universe", her 2003 public lecture at Princeton (video): http://www.listeningtowords.com/lecture.php?id=319

Shoemaker, Carolyn (1929 -)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Shoemaker.

Levy, David "Star Trails: Carolyn Shoemaker" in Sky & Telescope, June 1991, p. 658.

Levy, David Shoemaker by Levy: The Man who Made an Impact. 2000, Princeton U. Press.

Biography of Eugene Shoemaker, but with much information about Carolyn's work.

Preston, Richard *First Light*. 1987, Atlantic Monthly Press. Section 2 is a profile of the Shoemakers. Reeves, R. "Interview with Gene and Carolyn Shoemaker: Meteor Crater to Palomar" in *Astronomy*, June 1993, p. 13.

Shoemaker, Carolyn "Ups and Downs in Planetary Astronomy" in *Annual Reviews of Earth and Planetary Science*, vol. 27, p. 1 (1999). Reminiscences about her career.

Web Sites:

Biography at USGS Page: http://astrogeology.usgs.gov/About/People/CarolynShoemaker/

Biography on the Universe Today Page:

http://www.universetoday.com/html/articles/2001-1211a.html

Brief Biography at the American Association of Petroleum Geologists Site:

http://www.aapg.org/explorer/2001/05may/denver_c_shoemaker.cfm

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/shoemaker.html

1994 Article from New Scientist, with history and reactions to the discover of Comet Shoemaker-

Levy 9: http://www.bibliotecapleyades.net/esp_shoemaker_a.htm

Brief Biography at the Harcourt School Site:

http://www.harcourtschool.com/activity/biographies_science/shoemaker/

Excerpt from the Book "Shoemaker by Levy" (see above) About Discovering Comet Shoemaker-Levy 9: http://pup.princeton.edu/chapters/s6909.html

Her 1998 Essay from *Science* Magazine on Space Exploration (with some thoughts about her own life and work): http://www.sciencemag.org/cgi/content/full/282/5394/1637

Stofan, Ellen

Stofan, E. "Venus: The Way We Might Have Been" in Stern, S.A., ed. *Our Worlds: The Magnetism and Thrill of Planetary Exploration*. 1999, Cambridge U. Press; pp. 31-45. Combines a discussion of the exploration of Venus with autobiographical information on her development as a scientist.

Web Sites:

Appearance on Planetary Society web radio show discussing lakes on Titan:

http://www.planetary.org/radio/show/00000220/

JPL Podcast with Slides on YouTube (about lakes on Titan):

http://www.youtube.com/watch?v=0PP5hSbwHXQ (Transcript at:

http://www.nasa.gov/multimedia/podcasting/jpl-cassini-20070103.html)

Tarter, Jill (1944 -)

Armstrong, Mabel *Women Astronomers: Reaching for the Stars.* 2008, Stone Pine Press. This book for teens has a chapter on Tarter.

Drake, Frank & Sobel, Dava *Is Anyone Out There?* 1992, Delacorte/Bantam. Page 152 ff. Has a number of discussions of Tarter's life and work, especially in Chapters 7 & 10.

Jackson, Ellen *Looking for Life in the Universe: The Search for Extraterrestrial Intelligence*. 2005, Houghton Mifflin. A profile of Tarter and her work for young people in grades 4-8.

Lubick, N. "An Ear to the Stars" in *Scientific American*, Nov. 2002, p. 42. A brief profile of Tarter and her SETI work.

Swift, David "Interview with Jill Tarter" in SETI Pioneers. 1990, U. of Arizona Press.

Web Sites:

Her web page at the SETI Institute: http://www.seti.org/about-us/people/staff/tarter-jill.php
Profile in *Association for Women in Science Magazine* 2005: http://www.seti.org/pdfs/awis%20-%20tarter.pdf

Brief Profile on CNN Site: http://www.cnn.com/2004/WORLD/americas/04/15/tarter/index.html Interview on the KQED *Quest* Program site 2008 (video):

http://www.kqed.org/quest/television/interview-with-astronomer-jill-tarter--part-i-web-only Profile at Cornell University alumni site (1997):

http://www.news.cornell.edu/Chronicle/97/6.26.97/Tarter.html

Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/tarter.html

Her lecture at the Long-Now Foundation on "The Search for Extra-terrestrial Intelligence:

Necessarily a Long-term Strategy" (2004 audio):

http://www.listeningtowords.com/person.php?id=37

Her lecture on the Allen Telescope Array and SETI at the Silicon Valley Astronomy Lectures (2008 audio): http://www.astrosociety.org/education/podcast/index.html

Trimble, Virginia

Trimble, Virginia *Visit to a Small Universe*. 1992, American Institute of Physics Press. A collection of her articles, including several that bear on her own life and work.

Web Sites:

Her home page at U. of California, Irvine: http://www.ps.uci.edu/physics/trimble.html

Brief profile at the American Institute of Physics:

http://www.aip.org/history/historymatters/trimble.htm

Brief profile at Johns Hopkins: http://www.jhuapl.edu/techdigest/td2201/trimble.pdf Interview on the "Science and Society" podcast:

http://www.scienceandsociety.net/audio/trimble.mp3

Transcript of a brief interview about telescopes (with a bit about her life) on ABC:

http://www.abc.net.au/rn/scienceshow/stories/2000/148938.htm

Her "Top 10" lists for the astronomy of the past and future:

http://www.aps.org/publications/apsnews/200010/astronomy.cfm

Wolff, Sidney (1941 -)

Waldrop, Mitchell "New Director Named for Kitt Peak" in *Science*, vol. 224, p. 265 (Apr. 20, 1984).

Wolff, Sidney "A Search for Aperture: A Selective History of Telescopes" in *Mercury (the magazine of the Astronomical Society of the Pacific)*, Sep/Oct. 1985, p. 139.

Web Sites:

Announcement of her AAS Education Prize: http://www.noao.edu/outreach/press/pr06/pr0605.html Brief Biography from the ASP's Women in Astronomy Slide Set:

http://astro.berkeley.edu/~gmarcy/women/wolff.html

Her speech for the 100th anniversary of the American Astronomical Society (pdf file): http://www.aas.org/publications/baas/v32n2/wolff.pdf

Brief biography on her textbook page:

http://www.thomsonelearning.com/cengage/instructor.do?product_isbn=9780495017905&code id=2BB6&disciplinenumber=19&courseid=AY03&sortby=copy&type=all_radio&codeFlag=tr_ue&maintab=About_the_Book&subtab=About_the_Author

5. (A Few) Articles or Books about Other Individual Women Astronomers

Baliunas, Sallie: *see* Flamsteed, Sam "Star Spots: The Work of Sallie Baliunas" in *Discover*, Dec. 1991, p. 29.

Boesgaard, Ann "One Woman's Journey" in *Mercury (the magazine of the Astronomical Society of the Pacific)*, Jan/Feb. 1992, p. 19.

Conklin, Nan Dieter *Two Paths to Heaven's Gate.* 2006, NRAO Archives, 520 Edgemont Rd., Charlottesville, VA 22903. A memoir by a pioneering radio astronomer.

- Donahue, Megan "Clusters of Galaxies and the Fate of the Universe (or How to be a Cosmologist without Really Trying" in Stern, S. Alan, ed. *Our Universe: The Thrill of Extragalactic Exploration as Told by Leading Experts.* 2001, Cambridge U. Press; pp. 107-126. Combines a discussion of her work and her development as a scientist.
- Hu, Esther "Looking Back in Time: Searching for the Most Distant Galaxies" in Stern, S. Alan, ed. *Our Universe: The Thrill of Extragalactic Exploration as Told by Leading Experts.* 2001, Cambridge U. Press; pp. 23-36. Combines a discussion of her work and her development as a scientist.
- Sargent, Anneila: *see* Goldsmith, Donald *The Astronomers*. 1991, St. Martin's Press. See Chapter 12 of this book, which focuses on the work of a few astronomers at the frontiers of science.