

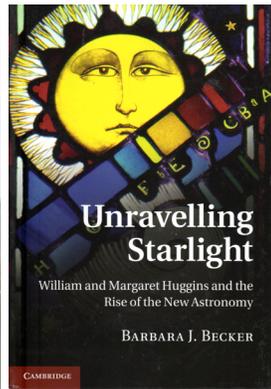
# H·A·D NEWS

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*The Newsletter of the Historical Astronomy Division  
of the American Astronomical Society*

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Number 85 \* October 2014



## **Osterbrock Award to Becker**

*Jay M. Pasachoff, Williams College  
(for the HAD Prize Committee)*

The Historical Astronomy Division is pleased to announce the award of its Donald E. Osterbrock Book Prize for 2015 to Barbara J. Becker, for *Unravelling Starlight: William and Margaret Huggins and the Rise of the New Astronomy* (Cambridge University Press, 2011). Dr. Becker taught history of science at the University of California, Irvine, and is now retired and living in North Carolina.

Becker has studied William and Margaret Huggins for decades, and the culmination of her detailed archival work is *Unravelling Starlight*, an invaluable analysis of the roles of these pioneers in astrophysics. The Hugginses were active in England in the late 19th century at a time when merely measuring the positions and brightnesses

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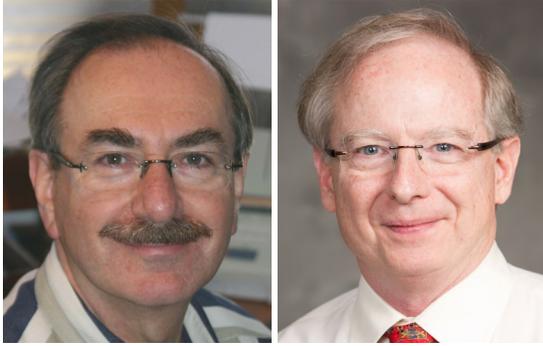
## **On to Seattle!**

*Joseph S. Tenn, Sonoma State University*

The January 2015 HAD meeting in Seattle will be a full one, with three special sessions, an Osterbrock Book Prize lecture, oral and poster contributed papers, the annual business meeting, and the eighth annual HAD minibanquet. The business meeting will conclude with the installation of the new HAD Committee.

The meeting will begin at 1:30 p.m. Sunday, 4 January, with a special session on “The Impact of the Great War on Astronomy and Other Sciences.” Organizer Virginia Trimble has lined up speakers Daniel Kevles (Yale University), Alan Batten (Dominion Astrophysical Observatory), Peter Abrahams (HAD), Peter Broughton (Royal Astronomical Society of Canada), Virginia Trimble (University of California, Irvine), and Martin Harwit (Cornell University).

[\*continued on p.11\*](#)



### New Officers Elected

*Joseph S. Tenn, Sonoma State University*

At the end of the HAD Business Meeting in Seattle on 5 January, the Division will come under new management.

Jay Pasachoff will turn over the gavel and the “Ich bin HAD” plaque to new Chair Marc Rothenberg (above, left). Jay will then become Past Chair and thus Chair of the HAD Prize Committee, which will immediately start soliciting nominations for the 2016 LeRoy E. Doggett Prize for Historical Astronomy.

The three winners of the recent election will also assume office: **Patrick Seitzer** (above, right) will become Vice Chair/Chair Elect, which will put him in charge of soliciting and editing obituaries of all newly-deceased AAS members for the next two years, **Brenda Corbin** (below, left) will join the HAD Committee as an at-large member, and the re-elected **Linda French** (below, right) will remain on it for another two years.



The Division is grateful to those who agreed to be on the ballot as well as to the nomination committee of Jennifer Bartlett (chair), Peter Abrahams, and Donald Olson. Thanks to those who have served their terms: Jarita Holbrook, who will complete six years of service as Vice Chair, Chair, and Past Chair, and Wayne Orchiston, who has completed his term on the HAD Committee.



Also joining the HAD Committee will be **Jay Holberg** (above), who has accepted appointment to a four-year term as Secretary-Treasurer. The author of a book, *Sirius: The Brightest Diamond in the Night Sky*, and several articles on historical astronomy, Jay served as an at-large member of the HAD Committee in 2007–2009.

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### From the Chair

*Jay M. Pasachoff, Williams College*

It has been a tremendous pleasure to chair the Historical Astronomy Division for the past two years. I look forward to seeing many of you at the HAD sessions at the Seattle meeting of the American Astronomical Society in January 2015.

The added-value I tried to attain for HAD during my two-year tenure was joint meetings with other divisions, and I was very glad that we had successful sessions jointly with the Division of Planetary Sciences in Denver in 2013 and with the Solar Physics Division in Boston in 2014. As I write this, we have a program planned for HAD jointly with DPS again, this time in Tucson in November 2014. Many attendees of those divisional meetings don't come to the January main AAS meetings when we have our normal HAD sessions, so these additional sessions displayed the History of Astronomy to new audiences for us. It is fascinating for me to listen to papers spanning such a wide range of

interesting topics and also spanning millennia.

As I write, I am soon to attend the Division Leadership Meeting of the American Astronomical Society in Washington, DC, at headquarters. I have known throughout my term, of course, that I was to be succeeded by Marc Rothenberg, whose training from the historical side of the history of astronomy contrasts with my training from the astronomical-research side. I've enjoyed interacting with Marc over the past two years, including our joint advance reconnoitering of the National Harbor venue of the 2014 meeting. And now I am very glad to welcome Jay Holberg to the Secretary-Treasurer position. They take their positions as Chair and as Secretary-Treasurer, respectively, at the Seattle meeting, and both will join me in Washington for the October 9-10 Leadership Meeting.

The person who does most of the work for HAD, of course, is the Secretary-Treasurer, and I have been very fortunate to have had Joe Tenn in that position. He is extremely active, careful, capable, and thorough. I hope that in his retirement from the position, he finds things to do as interesting and important for the community as his work with HAD. Thanks, Joe. I hope we find things to work together on in the future.

Looking forward to our HAD sessions in Tucson 2014, Seattle 2015, and beyond, and to interacting with those interested in the history of astronomy at the International Astronomical Union's General Assembly in Honolulu in August 2015.

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### **From the Vice Chair**

*Marc Rothenberg*

*National Science Foundation*

I look forward to my term as Chair of the Historical Astronomy Division working with stellar colleagues: Patrick Seitzer, as Vice

Chair/Chair Elect, Brenda Corbin and Linda French on the HAD Committee, and Jay Holberg as Secretary-Treasurer. I also look forward to continuing to work with my predecessor, Jay Pasachoff, who has set a high bar for me with his many accomplishments, and who will remain on the Committee as Past Chair. In particular I want to continue his efforts to have a larger HAD presence at other AAS Division meetings.

The HAD program for the January meeting in Seattle is very interesting, and I look forward to seeing you there. I want to particularly draw your attention to the session organized by David DeVorkin, "Preserving the Material Legacy of the American Observatory Movement," to be held on Monday, 5 January 2015. There is a description of the session elsewhere in this newsletter. This is a topic dear to my heart and one I hope to spend time on while Chair. How are we going to ensure the preservation of our heritage as American astronomers? And as we struggle with these issues for this generation of observatories, what about the next generation? The national observatories have reached the half-century mark. What about their material future?

Finally, I want to express my appreciation, admiration, and heartfelt thanks to Joseph Tenn, who has served the Division so well as Secretary-Treasurer. Over the last two years he has taught me much about HAD, caught a few of my more egregious errors, and politely kept me on schedule. Joe, I know Jay Holberg will be a worthy successor, but I will miss your emails.

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### **From the Secretary-Treasurer**

*Joseph S. Tenn, Sonoma State University*

This is my last column as HAD Secretary-Treasurer, thanks in part to the writers of the Bylaws, who wisely imposed term limits. I will leave office at the end of the Seattle meeting in January, having served just one month short of the

record held by David DeVorkin, who served the full eight year maximum in 1985-93.

When I was appointed in February 2007, I was teaching half-time, just two courses per semester, so I had enough time to devote to the job. After I fully retired from teaching in May 2009, I was able to devote even more time to HAD activities. I am proud of our accomplishments in the past eight years. Together with HAD Chairs Sara Schechner, Thomas Hockey, Jarita Holbrook, and Jay Pasachoff, and with the others who have served on the HAD Committee—Donald Yeomans, Jay Holberg, Eugene Milone, Kevin Krisciunas, James Lattis, Richard Jarrell, Wayne Osborn, and Marc Rothenberg—I have seen considerable growth in the activities of the Division.

We have increased the number of our special sessions at the winter AAS meetings, added additional meetings with other AAS divisions, initiated the Donald E. Osterbrock Book Prize and the HAD Student Travel Award, and supported a Cultural Astronomy Summer School for professional astronomers at the summer 2009 AAS meeting. Also, I have greatly expanded the HAD website and regularized HAD News, publishing two issues per year. It was my good luck that the HAD Committee decided to make this an online publication just before my appointment, so I have only had to print and mail out a small number—thirty-three for my first issue, just nine now.

My greatest personal achievement was probably the establishment of the annual HAD minibanquet. It started in Austin in 2008 as a way for HAD meeting attendees to casually dine and talk together after the sessions, and it has continued every year since. In reaction to the expensive and formal AAS Banquets, it has always been casual and relatively inexpensive, and it has never included speeches. The AAS Banquets are no more, but the HAD minibanquets live on!

Our finances are in good shape. When I began, I was told that there was a checking account of less than \$1000 and that I should transfer it to a bank in my home town. It could be replenished from some other funds vaguely known to be held by the AAS. I balked at this and asked that the AAS Chief Financial Officer handle the banking and keep all of our funds in one account. To my astonishment I found that the Division had over \$20,000. Today there is about \$17,000, despite the facts that we spent about \$4700 on the Cultural Astronomy Summer School, we started providing

some funds to organizers of Special Sessions at our meetings (currently \$1250 per session), and we now award \$500 to a graduate student to speak at each winter meeting. How have we done it? Increased donations have helped, but also important has been investment income—our funds rise (and fall) with the stock market, and right now it is high. A modest dues increase that took place at the beginning of this year should allow some increases in expenditures. The amounts for special sessions and for the Student Travel Award could be increased, for example.

When I started we had one prize fund, to support the LeRoy E. Doggett Prize for Historical Astronomy, a lifetime achievement award that has now been awarded to nine of the world's leading practitioners of historical astronomy. (I can't say historians of astronomy. Ask Owen Gingerich why.) It is awarded every even-numbered year. There was a bit more than \$30,000 in the fund in 2007. Today the balance is \$36,000, thanks to generous donors and the current high value of stocks.

In 2010 we started the Donald E. Osterbrock Book Prize, awarded each odd-numbered year to the author(s) of an outstanding book on historical astronomy. As I write this the prize fund contains more than \$19,000.

Both prize funds depend on donors for replenishment, as they would need to be much larger for the prizes and recipients' expenses to be awarded from interest alone. The winter meetings have been enlivened by the invited talks given by the prize recipients—plenary lectures to the entire AAS by Doggett Prize recipients and lectures to HAD by authors awarded the Osterbrock Prize.

We have also started two new initiatives. One is an Oral History Project led by Jarita Holbrook. She and her team have started interviewing a new generation of astronomers to supplement the interviews conducted by the AIP Center for History of Physics some years ago.

And I have started the Astronomy Genealogy Project (AstroGen), which will keep me busy after I leave the HAD Committee.

So is everything perfect? No. In my opinion, the biggest problem facing HAD is the failure to keep up with the one job assigned to the Division by its parent organization, the AAS. That is the preparation of an obituary for each newly-deceased member or former member of the

Society. Although it is not specified in the Bylaws, it has been the custom for some years for the Vice Chair of HAD to chair the AAS Obituary Committee (in practice to be the sole working member except on rare occasions). The Vice Chair is supposed to find someone to write each obituary, edit it, and turn it over to the AAS staff for publication in the *Bulletin of the AAS*, which is now entirely online. As the Society has grown, this has become too big a job for one person, especially since that person changes every two years, and it has become increasingly difficult to find writers who will complete their commitments and turn in the obituaries they have pledged to write. The backlog is now quite large. When I checked recently there were nearly 600 deceased former members of the AAS listed on the Society's website. Of these there were about 120 awaiting obituaries. And as I do research for AstroGen I keep finding more.

I recommend to the next HAD Committee that it seriously consider revising the method of organizing, soliciting, and publishing the obituaries. It may be best to have someone serve a much longer period devoted to this task and let the HAD Vice Chair spend his or her two-year term on other tasks.

I wish my successor, Jay Holberg, well, and I am confident that HAD will continue to thrive.

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## The HAD Oral History Project

*Jarita Holbrook*

*University of the Western Cape*

The HAD oral history project was busy this summer. Jim Lattis interviewed Blair Savage. I went to Cambridge, UK to interview Sverre Aarseth and Rob Kennicutt. Finally Dan Pendick of the U.S. Naval Observatory interviewed Nancy Grace Roman. These interviews are in the process of being transcribed and reviewed. Transcripts of these interviews will appear on the website of the AIP Center for History of Physics at <http://www.aip.org/history/nbl/oralhistory.html>.

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## HAD Student Travel Award

*Joseph S. Tenn, Sonoma State University*

Since 2011 HAD has made available an award of \$500 to one graduate student to attend and present a paper at each winter HAD meeting. For the 2015

meeting in Seattle the recipient will be Nora Mills Boyd, who is pursuing a Ph.D. in the history and philosophy of science at the University of Pittsburgh. Her talk, "Why Spectroscopy Went South," will deal with the establishment of the first observatory dedicated to astrophysics in Chile, a result of the D.O. Mills expedition of Lick Observatory.

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## Call for Nominations for the 2016



## LEROY E. DOGGETT PRIZE FOR HISTORICAL ASTRONOMY

*Jay M. Pasachoff, Williams College*  
Chair-Elect, HAD Prize Committee

The Historical Astronomy Division of the American Astronomical Society awards its highest honor, the LeRoy E. Doggett Prize, biennially to an individual who has significantly influenced the field of the history of astronomy by a career-long effort.

Any member or affiliate member of HAD may nominate a candidate for the Prize. Nominations must include at least one detailed letter of support and a complete curriculum vitae for the nominee. Supporting letters are welcome.

**Deadline for nominations for the next prize cycle will be 1 March 2015.** Nominations roll over for two prize cycles.

Please send supporting materials to the Secretary of the Prize Committee, Jay Holberg. E-mail to [hadsec@aaas.org](mailto:hadsec@aaas.org) is preferred.

For further details about the Prize and information about past recipients, please visit <http://www.aas.org/had/doggett/>.

## AstroGen Progress

*Joseph S. Tenn, Sonoma State University*

Quietly working behind the scenes with information available online, the Astronomy Genealogy Project team has entered roughly 4500 astronomers into its database. For each astronomer the information entered includes name, years of birth and death, if available, university that granted the highest degree (nearly all of those entered to date earned doctorates), degree, year, thesis title, advisor(s), and other mentors. Where available, links have been obtained to astronomers' home pages if they are living or to obituaries if they are not, and to their theses if these are online. It may come as a surprise to some, but today's theses are entered and stored online, and many are available to all. It is likely that most American dissertations never see paper, while new Ph.D.s in the Netherlands have theirs lavishly printed. All the Dutch theses are also available free online, while most American ones are available only to those with a subscription to ProQuest, the successor to UMI. Fortunately, most universities subscribe. Some theses are withheld at their authors' requests. There are even a few cases where the authors sell them on Amazon.com.

There are still a number of problems to be solved before AstroGen can be posted and those not in the database invited to enter themselves. There are questions regarding nearly every one of the items entered. For example, should we use the name at the time of the doctorate, or the name by which the person is best known? (We intend to have all names in the database.) Should we translate everything into English? How do we handle universities that have changed their names several times and absorbed other institutions over the years, or even split into two or more institutions? The biggest question is how to assign a subject class. The Mathematics Genealogy Project (<http://genealogy.math.ndsu.nodak.edu/>) divides theses into a great many subfields, one of which is "astronomy and astrophysics").

If these questions interest you, and you think you might want to help out, please contact me or come to a meeting of the AstroGen team right after the Tuesday morning session of the Seattle meeting in the same room of the convention center.

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## Hubble's Legacy

*David H. DeVorkin, Smithsonian Institution*

After the fifth and final servicing mission to the Hubble Space Telescope in May 2009, and after a host of postflight inspections, two of the most significant instruments in Hubble's lifetime, the second Wide Field Planetary Camera (WFPC2) and the Corrective Optics Space Telescope Axial Replacement (COSTAR), were loaned to the National Air and Space Museum (NASM) in time for a two-day public symposium in November 2009 celebrating Hubble's legacy.

The symposium was divided into three sections:

- (1) conceiving and selling the idea of a large orbiting optical telescope to astronomers, the National Aeronautics and Space Administration, and the U.S. Congress, its creation as the HST, and its definition as a serviceable mission (Robert W. Smith, moderator; Nancy Grace Roman, C. Robert O'Dell, and Edward J. Weiler),
- (2) its launch, the discovery of the flawed mirror, the engineering of the mirror fix, subsequent servicing missions, decisions on upgrades, and the controversy over a "final" servicing mission (Joseph N. Tatarewicz, moderator; John Trauger, Harold J. Reitsema, and John M. Grunsfeld),
- (3) HST's public image after launch—how the mirror fix changed its public image, how the HST then changed the way we visualize the universe, and how the public saved the final HST servicing mission (Steven J. Dick, moderator; Kenneth R. Sembach, David S. Leckrone, Zoltan Levay, and Elizabeth A. Kessler).

Each section was framed and edited by its moderator, a historian of note who had engaged in the history of the Hubble. The general proceedings were co-edited by Roger D. Launius and the undersigned (who added an epilogue on exhibiting the Hubble), and we added a fascinating internal NASA study by Steve Dick on the initial cancellation of the final mission, and its reversal.

The entire book is available free in pdf format from <http://opensi.si.edu/index.php/smithsonian/catalog/book/57>. A paperback version (Smithsonian Institution Scholarly Press, 2014) will appear soon, in limited run, and both COSTAR and WFPC2 are now in the permanent collection and on display at the NASM.

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### Alfred Joy's Method of Research

*Helmut A. Abt, Kitt Peak National Observatory*



Alfred H. Joy (1882-1973) spent most of his research career (1915-1973) as an astronomer at the Mount Wilson Observatory (Abt 1973, Herbig 1974). Initially he was employed by George Ellery Hale to assist in the solar and the spectroscopic

parallax programs, the latter under Walter S. Adams. However, about 1922 he started to work independently on spectroscopic stellar programs. That was a time when astronomers began to understand the physics of stars and the nature of their spectra. Also spectroscopic equipment was being developed to allow studies at high spectral resolution of even faint stars. It was an opportune time to develop an understanding of the strange and diverse characteristics of various kinds of stars. Joy contributed to the initial understanding of some of those.

This paper is not intended to explain Joy's many astronomical contributions; that was done very thoroughly by Herbig (1974). Rather, this paper describes how he worked. His method was to identify a field that was in need of study, to collect observations and measurements for roughly five years, and then to collect all that he learned into a major paper. That was opposite to the technique that has been called "salami science": scientists who wanted to enlarge their lists of publications would break up a large study into a long series of partial results, filling the literature with many minor papers. The physicists several decades ago talked about "the least publishable unit" of research – the smallest amount of new information that would be accepted for the publication of a paper. Instead, Joy kept his mind on the final result. Although he continuously wrote short papers on individual stars of astrophysical interest, he did not publish his major studies in piecemeal fashion.

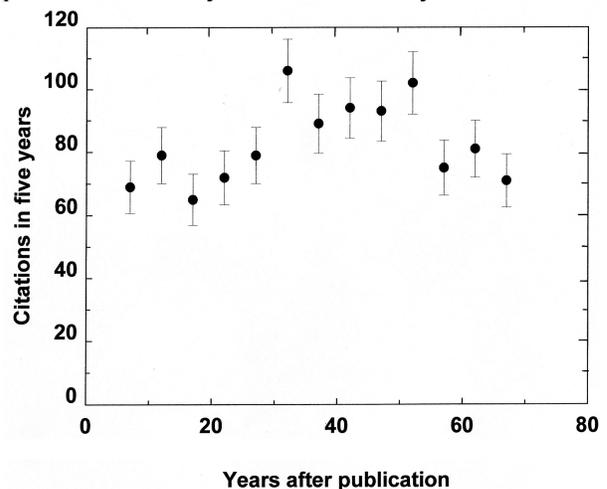
The table lists Joy's 10 major papers in his independent work at the Mt. Wilson Observatory. There is some overlap of these programs; at times he collected data for two or three projects.

One unusual aspect of these seminal papers is their long citation histories, collected from the ADS

Paper	Topic	Cit.
Joy 1926	o Ceti (Mira)	50
Joy 1937	Cepheid radial velocities	99
Joy 1945	T Tau variables	294
Joy 1947	M dwarf radial velocities	93
Joy 1949a	Stars with H&K emission	65
Joy 1949b	Globular cluster variables	75
Joy 1949c	Bright-line stars in the Taurus dark cloud	121
Joy 1952	RV Tauri stars	68
Joy 1954	o Ceti (Mira) observations	85
Joy & Abt 1976	M dwarf spectral types	200

(Astrophysics Data System). The figure shows how their citations are distributed in time. What is plotted are the numbers of citations in bins of five years for the 10 major papers as a function of time after publication. The totals of those citation numbers are statistically constant during 60 years. He may have had a sense of which fields would be important, but he wrote papers with so many useful results that others have used them for 60 years or more. Considering the decrease in interest in stellar research in the U.S. in recent years (in favor of cosmology and the solar system), that is remarkable. Joy's 10 major papers produced 47% of all the citations to his 214 papers.

Is this long citation history unusual? For a comparison I looked at the citations to papers by one of his contemporaries. Citations for his 10 most cited papers had a slow start, then a peak and a linear decline to half the peak numbers in 33 years. In 60 years the citations were 21% of the peak values – very different than Joy's values.



There is an interesting anecdote regarding Joy's last paper. The policies of the Mt. Wilson Observatory during most of the 20<sup>th</sup> century were that astronomers must retire at 65; after that they could retain offices but they could not observe. That policy really hurt Walter Baade, who had discovered, at age 59, the two population types but did not have time to explore the implications. He returned to Germany after retirement and died the next year, probably deeply disappointed. Joy, instead, worked in his office every day until the age of 91. He was classifying the M dwarfs for which the Mt. Wilson Observatory had spectra in its files, taken for radial velocity measurements. When he thought of publication, he was discouraged by his photoelectric colleagues who said that their colors were more accurate than Joy's types so that it was not worth publishing the types. I told him "Bunk! The photoelectric observers could not tell [at that time] a dMe star from a dM star." Joy compiled his list of types and sent me a carbon copy from his typewriter. I compiled the numerous names of the stars and plotted their characteristics, such as the increase of fractions of emission-line stars with temperature. He corrected the manuscript before he died.

But Joy's major papers were not simply collections of data. For instance his radial velocity curves for 156 Cepheids (Joy 1937) was followed in Joy (1939) by an analysis determining the distance (10 kpc) and direction ( $325.3 \pm 1.3^\circ$  in the old system of longitudes) of the galactic center, the mean interstellar absorption ( $0.85 \text{ mag kpc}^{-1}$ ), and the Oort constants. His values for all these are similar to the best current ones. The latter paper (Joy 1939) has a citation history that has increased with time up until the present (2013), similar to Figure 1.

It would be more efficient, in terms of publication space and our time, for us to emulate Joy's method of doing and publishing research, although some of our organizations will not have the patience to allow us to publish major papers only at 5-year intervals. Joy avoided that by small studies of individual stars of astrophysical interest.

This research made use of NASA's *Astrophysical Data System Bibliographic Services* (ADS).

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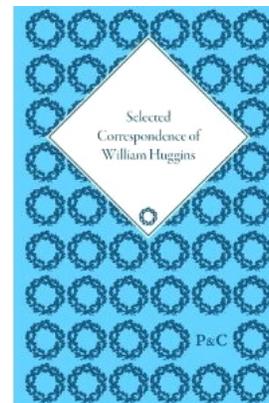
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## Book Review

Jay M. Pasachoff, *Williams College*

*Selected Correspondence of William Huggins*, ed. by Barbara J. Becker (Pickering and Chatto, <http://www.pickeringchatto.com/>, 2014).

Our Osterbrock prizewinner, Barbara Becker, has not only surveyed the lives and work of William Huggins and his wife, Margaret, but she has also over decades undertaken the massive and rewarding task of providing, transcribing, and annotating William Huggins's extensive correspondence. Some 90-odd figures, several of which are photographs, are also scattered through the text. Some letters were from Lady Huggins, and a few are relevant letters by other colleagues.

Huggins corresponded with anybody who was anybody in the world of astronomy of the late 19th century, as he was one of the leaders of the rise of spectroscopy and, with it, astrophysics. Dr. Becker's search took her to many countries and to many libraries and archives, with correspondents at others from as far away as South Africa, and we can all benefit from her assiduousness. Her acknowledgments even include people who helped

her deciphering Huggins's handwriting and for people who helped with translating "Huggins's handwritten Latin and Greek text." Many of the letters she found were in the archives of those who received them.

As Becker describes in her interesting general introduction, among the astronomers with whom Huggins corresponded were Airy, Gill, Hale, John Herschel, Holden, Janssen, Lockyer, Robinson, Struve, and Young, as well as non-astronomers Darwin, Larmor, Clerk Maxwell, Ramsay, Rutherford and Stokes. This book is certainly not one to be read at a single sitting, but it could well be kept in ready reach for occasional reading, with each session almost guaranteed to be interesting.

As a solar astronomer, I was particularly interested in the correspondence about William and Margaret trying to photograph the corona without an eclipse. Fortunately for us in the 21st century, they didn't journey themselves to South Africa, but wrote instructions for David Gill at the Cape, providing a written record that we can now read. Perhaps I can see some of that correspondence in the original when I visit Cape Town for the 43% partial solar eclipse on September 13, 2015 (its 78% maximum in Antarctica being inaccessible). The Hugginses had extensive correspondence with George Ellery Hale as well as several visits from him; the Hugginses' solar studies are much less known than their other work, as Becker's biography describes.

In the correspondence, we thrill from page 1's sentence on the correspondence between other scientists that "At the moment I am occupied by an investigation with Kirchhoff which does not allow us to sleep," and readers are helped by the footnotes identifying them both and the background. Huggins's own letters start in 1862 and continue in 1865 with "I have read Secchi's strange account of the spectrum of the red star," identified in an editor's footnote as UU Aurigae = HD 46686, a 6th magnitude Mira-type variable star with a period of 234 days and an amplitude of 2.2 magnitude...." The editorial apparatus supplied by Dr. Becker is impressive beyond words.

How about, "From J. C. Maxwell, 2 May 1872," "Toby and I enclose our photographs with our best regards to you and Kepler"? Becker's footnote explains that "Kepler was Huggins's pet mastiff. Toby was Maxwell's dog." This correspondence is followed 10 items and 8 months

later by a letter from Darwin to the editor of *Nature* about the evolution of the minds of dogs, quoting Huggins!

Barbara Becker's monumental volumes of William Huggins's correspondence belongs in all good libraries, and readers of this review can foster not only the knowledge in these books but also the future of publications in the history of astronomy to see that the books are widely dispersed in libraries. I did have to persuade Williams College's librarians to pay the huge price of these books, but it is repositories like theirs that are responsible for the support of such valuable publications as these massive volumes.

Readers are also invited to read my wife's (Naomi Pasachoff's) review of the two Becker volumes at the Newsletter of the IAU Commission on Education and Development, forthcoming: <http://iaucomm46.frm.utn.edu.ar/newsletters/>.

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## Celebrating the Huggins Sesquicentennial

*Tom English*

*Guilford Technical Community College*

On the evening of 29 August 1864, William Huggins became the first person to view the spectrum of a nebula. "No spectrum such as I expected!" he later recounted in his 1897 career retrospective, "The New Astronomy," an article that for a century served as the official history of the scientific career of this father of astrophysics.

On 29 August 2014, 150 years after the discovery, Cline Observatory at Guilford Technical Community College in Jamestown, NC, commemorated Huggins's discovery. We invited his biographer, Barbara J. Becker, to present "'No spectrum such as I expected!': William Huggins and the Riddle of the Nebulae," and to join us in a re-creation of the discovery observations. Despite it being the Friday of Labor Day weekend, over 100 turned out for the lecture and observing session.

Becker's lecture drew from Chapter 5 of her book, *Unravelling Starlight: William and Margaret Huggins and the Rise of the New Astronomy*, winner of this year's Donald E. Osterbrock Book Prize.

The presentation established the landscape onto which Huggins stepped in 1864 when he

decided to turn his attention to the riddle of the nebulae. By the 1850s Lord Rosse had given up hope that the true nature of the nebulae would ever be uncovered, but intriguing changes in nebulae observed by Hind, Webb, and others in the early 1860s set the stage for Huggins, who had thus far confined his efforts to stellar spectra, to use his instruments to explore the nature of the nebulae.

His first target was 37. H IV Draconis (NGC 6543, the “Cat’s Eye” nebula). Becker suggests that he chose this object because it was nearly straight overhead during the evening in August, far from the smoky London horizon, and that it was known for showing a little color, thus making it an inviting target for spectroscopy.

The unexpected spectrum showed “A single bright line only!” according to Huggins, and Becker told the audience that this observation was as much a watershed moment as when Galileo first turned his telescope toward the heavens. No astronomer since that night was ever able to think about the problem of the nebulae in the same way again. William Huggins had provided the seismic shift that changed the astrophysical landscape forever.

Huggins looked at other nebulae as well, including NGC 6572 (the Emerald Nebula in Ophiuchus), NGC 6826 (the Blinking Planetary in Cygnus), NGC 6818 (the Little Gem in Sagittarius), NGC 7009 (the Saturn Nebula in Aquarius), M57 (the Ring Nebula in Lyra), NGC 7662 (the Blue Snowball in Andromeda), and M27 (the Dumbbell Nebula in Vulpecula). Each showed the same kind of spectrum as the nebula in Draco.

To close her presentation, Becker offered a tour of the Huggins observing plan, showing location maps, Hubble Space Telescope images, and amateur sketches of each nebula. A post-lecture observing session at Cline Observatory provided an opportunity for the audience to experience the observations for themselves. It had been cloudy all day, and a few persistent clouds hampered the beginning of the observing session, but the sky cleared to allow the nebulae to be observed. Becker had checked the contemporary newspapers for 29 August 1864 and shared that clouds filled the skies of London during the day Huggins made his discovery, but that they dissipated by the time of his evening observing session. How fitting that we shared similar conditions for our commemorative event.

With a Rainbow Optics Star Spectroscope provided by High Point University’s David Pitonzo, we demonstrated the spectrum of Vega as an example of the colorful and complex stellar spectra that Huggins had been studying before turning his attention to the nebulae. Then we moved the telescope to the Cat’s Eye Nebula and saw the simple monochromatic spectrum that surprised Huggins 150 years before. Several other nebulae from the Huggins list were also viewed.

It was exciting to be able to mark the sesquicentennial of this important discovery by staging an outreach session that not only allowed us to emulate the observations made by Huggins, but also to involve his award-winning biographer in the event.

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## IAU to Meet in USA

*Ken Kellermann*

*National Radio Astronomy Observatory*

The next triennial General Assembly of the International Astronomical Union will be held in Honolulu, HI next summer, with Scientific Symposia and Forums August 3-6 and 11-14. The IAU Divisions, Commissions and Working Groups will be meeting on August 7 and 10 and will likely include meetings of Commission 41, History of Astronomy. Also, the IAU Working Group on Historical Radio Astronomy will mark the 50th anniversary of the “The Golden Years of Radio Astronomy” which included the discoveries of quasars, pulsars, the CMB, radio recombination lines, cosmic masers, superluminal motion, variability, the rotation of Mercury and Venus, etc.

One does not need to be a member of the IAU to participate in meetings of the IAU General Assembly. But, those who are not already members of the IAU who are interested in joining and more fully participating in the activities of the Union can find an application form at <http://www.iau.org/submissions/membershipapplication/fpj7z1q8gwme/> which must be completed by December 15, 2014. All applications for membership from US based scientists will be reviewed by the U.S. National Committee for the IAU in early January 2015 and then forwarded to the IAU for further review and approval at the General Assembly in Hawaii in August 2015.

To apply for IAU membership normally you should be at least three years past the completion of a PhD in astronomy or a related field, currently

working in the field of astronomy, and currently residing in and planning on continuing career within the United States (U.S. citizenship is not required). There are no dues connected with individual membership as financial support for the IAU comes from the adhering countries, which in the case of the United States is the National Academy of Sciences.

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## Meeting in Seattle

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The second special session, on “Ideas of Evolution Inside and Outside of Astronomy during the Long 19th Century,” will begin at 4:00. Organized by Woody Sullivan, it will include talks by Sullivan (University of Washington), Gregory Good (AIP Center for History of Physics), Elizabeth Neswald (Brock University), and David DeVorkin (Smithsonian Institution).

Monday will see contributed poster papers all day and the third special session at 10:00 a.m. David DeVorkin will present a panel discussion: “Preserving the Material Legacy of the American Observatory Movement.”

He has found panelists from four of the great observatories founded in the 1870s–1910 whose historical portions have faced irrelevance or closing: Harold A. McAlister (Georgia State University) will represent Mt. Wilson, Doyal “Al” Harper (University of Chicago) Yerkes, Jeffrey C. Hall (Lowell Observatory) Lowell, and Sandra M. Faber (University of California, Santa Cruz) Lick.

After the business meeting, the Monday afternoon session will include three contributed oral papers and the presentation of the third Donald E. Osterbrock Book Prize to Barbara J. Becker, followed by her prize lecture on “Unravelling Starlight: William and Margaret Huggins and the Rise of the New Astronomy.”

That evening we will enjoy the eighth annual HAD minibanquet. Woody Sullivan is making the arrangements, and you will be asked to make reservations via e-mail later.

The remaining contributed oral papers will be presented in morning and afternoon sessions Tuesday.

Full abstracts of all HAD papers will appear soon on the HAD website at <http://had.aas.org/>.

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## Becker to Receive Osterbrock Prize

*continued from p. 1*

of stars and planets was widely considered the proper role of astronomers; their emphasis on the new technique of spectroscopy was a key ingredient in the birth of what came to be called astrophysics.

William Huggins, a former London silk merchant, was a prime example of a Victorian “amateur” astronomer who made fundamental contributions to the field. From his home in a London suburb he observed for decades, at first visually and then photographically, the spectra of stars and nebulae.

Huggins was the first to observe emission lines in the spectra of some nebulae (e.g., planetary nebulae), thereby suggesting their gaseous nature (by comparison with laboratory spectra), and he found no emission lines in others (e.g., globular clusters, the Andromeda nebula and its companion). Huggins was also the first to apply Christian Doppler’s principle to shifts in wavelength of a star’s light (Sirius) in order to determine its motion along the line of sight.

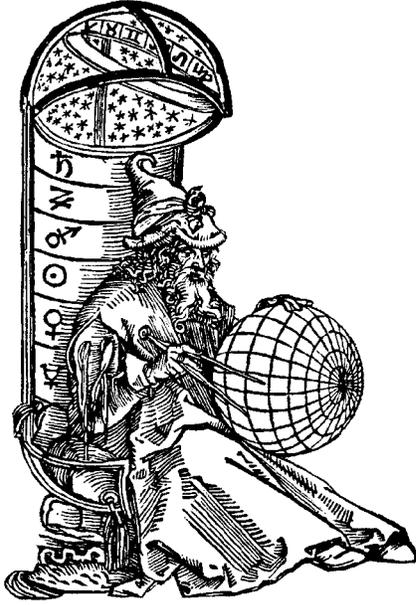
Becker’s double biography also reveals new insights regarding the under-appreciated role of Margaret Huggins in all aspects of the work after 1875. She was especially skilled in photographic techniques and, rather than a mere “Assistant,” she was a true collaborator.

Another of Becker’s new insights is how thoroughly the Hugginses were involved in solar observations, in particular suggesting plausible methods of observing solar prominences and photographing the solar corona without a total eclipse.

Since the publication of her prize-winning book, Becker has also compiled the *Selected Correspondence of William Huggins* (Pickering & Chatto, 2014) [reviewed on p. 8].

The Historical Astronomy Division Prize Committee is pleased to award the 2015 Donald E. Osterbrock Book Prize to Barbara Becker. We look forward to hearing her talk at our meeting in Seattle.

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### Historical Astronomy Division of the American Astronomical Society

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Please send contributions for the next issue,  
comments, etc. to [hadsec@aaas.org](mailto:hadsec@aaas.org).

A complete version of this newsletter, with color  
photographs and active links, may be found on the  
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