ABSTRACTS OF PAPERS PRESENTED AT THE 83RD SPRING MEETING HELD IN HOUSTON, TEXAS, MAY 20–21, 1994

SMALL-AMPLITUDE RED VARIABLES IN THE AAVSO PHOTOELECTRIC PHOTOMETRY PROGRAM: PERIOD ANALYSIS

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Abstract

The AAVSO photoelectric photometry program was established about a decade ago by Janet A. Mattei and John R. Percy in order to obtain long-term, high-precision observations of variables which (at least on some time scales) show variations which are too small to be monitored effectively by visual techniques. As of 1992, the photoelectric archive contained over 7000 observations in total (Landis, Mattei, and Percy 1992, IBVS No. 3739).

Most of the stars in the photoelectric program are red variables. With almost a decade of data on these stars, it is now possible to perform an effective period analysis. This we have done using a Fourier analysis program generously provided to the variable star community by Dr. E. P. Belserene. We report the results of the analysis here. Many of the stars show variability on two distinct time scales: tens of days (presumably due to pulsation) and hundreds of days (cause unknown).

**Lawrence Yu was a participant in the University of Toronto Mentorship Program, which enables outstanding high school seniors to work on research projects with university faculty.*

THE GREAT RED FLASHLIGHT

Edward A. Halbach
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Estes Park, CO 80517

Abstract

After fifty years of fighting with flashlights which persisted in rolling to the ground, being mislaid, or stashed in a pocket, the author designed a unit which was always on hand and needed no search for the switch. A normally closed switch, internal to the bottom of the flashlight case, is opened by the weight of the unit suspended on a cord about the neck. Lifting the unit with two fingers turns on the red light, while releasing the unit automatically turns it off. A felt covering around the flashlight provides comfort on cold nights.

Because this red light would be a welcome tool for other variable star observers, more units were assembled and brought to the AAVSO meeting in Houston for distribution to observers who agreed to give each unit a workout and report on its performance. The author is waiting to hear from these observers.

THE HOBBY-EBERLY TELESCOPE

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Abstract

Groundbreaking for the Hobby-Eberly Telescope, an international partnership, was held on March 25, 1994, at the University of Texas McDonald Observatory. The telescope's primary mirror will include 91 one-meter hexagonal segments. Innovative engineering limits expense to $13.5 million without degrading scientific performance. First light will be late 1996.

THE MICRO OBSERVATORY

P. Steven Leiker
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Abstract

For the past several years, a team of scientists, engineers, and teachers has been developing a low-cost, computer-driven, automated imaging telescope for classroom use. Adding the recently-developed technologies of CCD optical detectors and microcomputers to a small optical telescope, we have created a self-contained, integrated, and user-friendly telescope.

THE BIRCH STREET IRREGULARS: MYSTERIES FOUND AND RESOLVED IN THE AAVSO DATA ARCHIVES

Sara J. Beck
Michael Saladyga
Janet A. Mattei
AAVSO Technical Staff
AAVSO Headquarters
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Cambridge, MA 02138

Abstract

As they evaluate AAVSO data, AAVSO technical staff members run across several kinds of errors. This paper takes a humorous and Sherlock Holmes-style look at some of the most common kinds of errors detected, from observers recording the wrong Julian Date, misidentifying stars, transposing entries on the observer form, to garden-variety data entry errors.

MINUTES OF THE 83RD SPRING MEETING OF THE AAVSO HELD MAY 20–21, 1994 IN HOUSTON, TEXAS

Martha L. Hazen
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60 Garden Street
Cambridge, MA 02138

Festivities informally got underway on Thursday evening, May 19, when Tom and Anna Faye Williams hosted a delicious TexMex buffet supper at their home for all Council and Futures Study Committee members, as well as other early arrivals.

The AAVSO Council met on Friday morning, May 20. That afternoon, a very successful and informative informal CCD Workshop was held. In the evening a Texas Barbecue was held at nearby Brazos Bend State Park; this was followed by telescope observing, hosted by members of the Houston Astronomical Society, at George Observatory, located in the Park. Happily, it was clear and we had some good views of Jupiter.

The General Membership Meeting on Saturday, May 21 was called to order at 9:07 am by President Wayne Lowder.

Secretary Martha Hazen gave a summary of the minutes of the 82nd Annual Meeting of the AAVSO. The minutes were amended to change the months mentioned in the first and third paragraphs to October, and were then accepted as amended.

Treasurer Ted Wales presented his semiannual report. He mentioned that expenses were up from a comparable period last year, and indicated this was due to raises, an extra pay period in the year, etc. The income from our endowment (including the Clinton B. Ford Fund) has increased substantially; however, the financial support provided from gifts from members continues to be important. The treasurer's report was accepted as presented.

The following Committee reports were read:

CCD Photometry	Gary Walker, Co-Chair
Chart Distribution	Janet Mattei, Director
Eclipsing Binary	Marvin Baldwin, Chair *(Report read by Gerry Samolyk)*
New and Preliminary Charts	Charles Scovil, Chair
Nova Search	Ken Beckmann, Chair *(Report read by Wayne Lowder)*
Photoelectric Photometry	Howard Landis, Chair
RR Lyrae	Marvin Baldwin, Chair *(Report read by Gerry Samolyk)*
Solar Division	Peter Taylor, Chair *(Report read by Howard Landis)*
Supernova Search	Robert Evans, Chair *(Report read by Wayne Lowder)*
Telescope	Charles Scovil, Chair

Director Mattei read the report of new membership applications approved by the Council on May 20, 1994. Fifty-one applicants were accepted: 31from the United States and 20 from abroad. Annual members: 38; junior: 3; sponsored: 10. The states

producing the most applications were California, Illinois, New York, and Ohio. The top foreign countries represented were Hungary (mostly sponsored), Canada, and Spain. In reply to the question about their source of information on the AAVSO, *Sky & Telescope* topped the list (12), followed by other magazines/books (7), and personal contact with AAVSO members or office staff (7). Two members went from annual to sustaining and three from sustaining to annual. Forty-two members were dropped for being more than two years in arrears.

Director Mattei reported that in the last six months six members and one young non-member observer of long standing had died: Carl Anderson, a past president; Rt. Rev. Francis Bloy; Edwin Friton; Walter Scott Houston; James R. Linenschmidt; Donald R. Taylor; and Bengt Piolon, a very active non-member observer. All members present stood for a moment of silence in their memory.

Following a short break, Director Janet Mattei presented her semiannual report. Some of the highlights were:

1. Millionaires' Club—The 7.5 millionth observation was made of S CMi on September 13, 1993, by Stanislaw Swierczynski of Poland.

2. International Database—Headquarters is up to date in adding monthly observations to the database; part of the procedure is to identify discordant observations and ask the observers to check them.

3. Processing of archival data —Headquarters is now processing these the way current data are processed. The procedure will take approximately four years.

4. Evaluation of the data—The staff are currently working on the light curves for Hands-On Astrophysics stars, checking and flagging discordant observations.

5. Publications—Director Mattei presented a long list of publications, including three new ones: *Chart News*, *CCD Views*, and *Minima Timings of Eclipsing Binaries*.

6. Extended outreach programs—Several programs were mentioned:

   a. "Ask the Director" open phone lines, once a month, have been successful. The Director will continue this for the rest of the year.
   b. The new Observer Awards have received great feedback; the Director read excerpts from some of the letters.
   c. *AAVSO Chart News* has received manyfavorable reviews.
   d. Light Curve requests have been received trom many members and filled.
   e. Director Mattei had a very successtul trip to London and Cambridge, England, to present a talk at the annual meeting of the Royal Astronomical Society and to get together with members and BAA members there.

7. Data requests and special satellite projects—The office has received a record number of 116 data requests. Director Mattei read some highlights of responses to AAVSO data.

8. Educational Initiatives—A sample light curve and the ways it can be analyzed, developed under the Hands-On Astrophysics program, were shown. The Partnership in Astronomy program has been very successful, and the Director showed photos of a star party under this program, and also photos of participant Ben Oppenheimer presenting a poster paper at the American Astronomical Society meeting.

There followed a discussion of several options for getting the correct decimal of the Julian Dates for observations. Director Mattei said that this would be addressed in the next newsletter.

Director Mattei then discussed plans for future meetings. The 83rd Annual Meeting will be held at Headquarters in Cambridge, MA, on October 14–15, 1994. The 84th Spring Meeting will be held in Stamford, CT, to celebrate the 30th anniversary of the

Stamford Observatory. This will be sometime in May 1995, although the specific date has not been set. There have been several invitations discussed for other future meetings, and these are being looked into.

The membership business meeting was adjourned for the group photograph at 11:50 am.

The Scientific Paper Session was held from 2:00 to 5:15 pm. Twelve papers were presented. The complete list of papers is appended to the minutes.

The Banquet was held at 7:30 pm at the Houston Plaza Hilton. Following dinner, the members and guests joined in a recognition ceremony in which Director Janet Mattei presented the first Director's Award to Danie Overbeek, and President Lowder presented certificates to recipients of the AAVSO Observer Awards. Many of the recipients attended the meeting, and each one said a few words in recognition of mentors who had helped them along the way. After the awards, the participants listened to a fascinating talk illustrated by slides and a NASA videotape on "The STS-61 Hubble Space Telescope Repair Mission," by Dr. Jeff Hoffman, an astronomer-astronaut who was one of the four who did the actual repair.

For those participants who chose to take advantage of the opportunity, a trip to the NASA/Johnson Space Center was offered on Sunday, May 22.

Papers Presented at the Meeting:

John R. Percy	Small-Amplitude Red Variables in the AAVSO Photoelectric Photometry Program: Period Analysis
Raymond Benge	Teaching Science Through Variable Star Observing
Mark T. Adams	The Hobby-Eberly Telescope
David B. Williams	MP Puppis: An Eclipsing Binary with a Difficult Period
Peter Collins *(read by John Griesé)*	On Visual Nova Patrol
Edward Halbach	The Great Red Flashlight
Ronald E. Zissell	AAVSO CCD Program Stars
Sergio Dolminguez *(read by John Isles)*	Visual Photoelecric Study of 1206-58 W Crucis
Steve Leiker	The Micro Observatory
Casper H. Hossfield	An Antenna to Search for Gravity Waves from Binary Neutron Stars Having Orbital Periods Between 20 and 220 Seconds
Sara Beck, Michael Saladyga, Janet A. Mattei, AAVSO Technical Staff	The Birch Street Irregulars: Mysteries Found and Resolved in the AAVSO Data Archives

List of New Members Accepted at the Spring Meeting:

Ablett, Daniel Robert, CA
Banialis, Gregory P., IL
Borgwald, James M., VA
Bruhn, Carl, Denmark
Bush, James, FL
Cersosimo, Juan Carlos, PR
Dickinson, Terence, Canada
Domeny, Gabor, Hungary
Ducharme, Jean-Pierre, Canada
Gent, Robert Lee, TX
Grochowski, Radoslaw, Poland
Gunn, Jerry B., IL
Hamann, Thomas Alan, MN
Kassis, Marc, ID
Kiss, Laszlo, Hungary
Kuun, Herman L., OH
LaDuca, Robert L., Jr., NY
LaFavre, Jeffrey S., OH
Lauvstad, Sverre Johannes, Norway
Lauzier, Edward R., PA
Leiker, P. Steven, MA
Lenz, Ron, ID
Lucidi, Fabrizio, Italy
Maurer, Peter, Germany
Mendez-Alvarez, Javier Eugenio, Spain
Miami Valley Astron. Society, OH
Mitchell, Scott C., TX
Nagy, Zoltan A., Hungary
Papp, Sandor, Hungary
Phillips, Mary E., OK
Piggott, Edward J., AZ
Rodriguez Marco, Miguel, Spain
Rohde, James R., VA
Saliba, John, IL
Sarneczky, Krisztian, Hungary
Sasselov, Dimitar D., MA
Stanis, Rachel, PA
Swierczynski, Stanislaw, Poland
Sworin, David J., CA
Szabo, Robert, Hungary
Szentasko, Laszlo, Hungary
Tejera, Nestabo Suarez, Spain
Tracy, Scott Henry, CT
Trimble, Virginia L., CA
Trinkala, Michael J., NY
Ulrichsen, Robert F., Canada
Warner, Scott D., GA
Warren, Wayne H., Jr., MD
Weber, Charles F., NY
Wiesen, John G., APO (Military)
Wieszt, Krisztian, Hungary

List of Members Changing from Annual to Sustaining:

Adams, Mark T., TX
Boyle, Robert James, PA

List of Deceased Members:

Anderson, Carl, NH
Bloy, Francis E., CA
Friton, Edwin, MO
Houston, Walter Scott, CT
Linenschmidt, James R., TX
Piolon, Bengt, Belgium
Taylor, Donald R., CA

COMMITTEE REPORTS

CHARGE-COUPLED DEVICE (CCD)

Co-Chair: Gary Walker
8 Pond Street
Dover, MA 02030

Co-Chair: Priscilla J. Benson
Whitin Observatory
Wellesley College
Wellesley, MA 02181

This has been a busy time for the CCD Committee. The last report ended with the mailing of a CCD Observer Registration Form, a blank form to report observations, and directions for determining transformation coefficients and calculating transformed magnitudes. Shortly after the fall meeting, the filter order was closed with only 3 members needing filters. This did not meet the minimum order quantity of ten. All those expressing interest were notified to either proceed on their own or wait for a future time when the minimum quantity could be supported.

Observations were received from four members in BVRI on all 8 standard stars, totalling 382 measurements with a typical standard deviation of 0.03 magnitude and a resolution of 0.001 magnitude. In addition, measurements were made on approximately 1318 comparison stars in those fields. Feedback was provided to all observers showing their measurements in comparison to other observers. The agreement was well within 0.1 magnitude absolute. A database in Lotus was set up to catalogue these observations and a backup copy was sent to Headquarters.

The first *CCD Views* newsletter was published in February to keep members in touch with various developments. The Fourth CCD Workshop was organized and held on Friday, May 20.

Plans for the next six months include:

1. Increasing participation of CCD observers;
2. Selecting a second group of standard stars (RA 14–23);
3. Obtaining preliminary fields to assess comparison stars;
4. Submitting a proposal for time at Kitt Peak for standard runs;
5. Working out a standard means of electronic transfer of data;
6. Updating the database and corresponding with members;
7. Publishing the second issue of *CCD Views*.

CHART DISTRIBUTION

During the period October 1, 1993, to March 31, 1994, AAVSO Headquarters filled 79 chart orders and distributed the following numbers of charts:

Standard Charts	2636
Finder Charts	20
Charts in New Member Packets	518
Standard Hipparcos Charts	60
EUVE Charts	183
Total Charts mailed:	2417

In addition, 5 copies of *The AAVSO Variable Star Atlas* were sent out.

CLASSICAL CEPHEID

Chair: Thomas A. Cragg
19 Belar Street
Coonabarabran, NSW 2357
Australia

Editor's note: This is the final report of the Classical Cepheid Committee, which the AAVSO Council disbanded upon the chair's recommendation.

Presently there appears to be ample photoelectronic coverage of the brighter long period classical Cepheids in the professional world to render our visual efforts relatively unnecessary, at least as pertains to the northern Cepheids. In addition, there appears to be a lack of interest among observers to follow them sufficiently well for the reduced data to be comparable to the professional photoelectric results.

It is conceivable that visual work on southern Cepheids can be useful for a while, but photoelectric coverage on these is also increasing. Moreover, not many southern observers seem interested, as evidenced by the small number of estimates—too few at present to count as a significant contribution. It therefore seems advisable that the AAVSO disband this committee until evidence is at hand showing a need for visual work.

ECLIPSING BINARY

Chair: Marvin E. Baldwin
8655 N. Co. Road 775E
Butlerville, IN 47223-9220

Nineteen observers have reported data on eclipsing binaries during the past seven months. We estimate that more than 5000 observations have been added to our files during this period, with useful data on about 150 stars. About 300 minima have been observed directly and another 40 normal minima will probably be extracted from the random observations. In addition, Gilbert Lubcke has provided our first CCD observations. Gil has been working on shallow stars which have caused problems for visual observers.

Chris Stephan and I had a very successful season observing neglected stars in the Puppis region. We have been observing about 30 of these stars, usually making the observations at random. We now have well-defined visual light curves for most of these stars and can demonstrate their deviation from the established ephemerides with good accuracy. This method of observing has proven very effective for stars with long eclipses or poorly known ephemerides.

Our success story of the lost eclipsing binary, MO Puppis, continues. Following the discovery of the correct position for this star by Peter Kroll and Jan Maneta, David Williams observed this star on many Harvard plates and determined an ephemeris for its eclipses, enabling Chris Stephan and me to observe several minima visually during the recent appearance of this star.

Our first monograph, *Observed Minima Timings of Eclipsing Binaries No. 1*, which had been prepared for publication at the time of our last report, has since been printed and distributed. This listing contains more than 3500 minima of 50 stars. The second listing is now being prepared for publication.

NOVA SEARCH

Chair: Rev. Kenneth C. Beckmann
330 N. Washington
Kahoka, MO 63445

The Nova Search Committee continues to provide a brief handbook on beginning nova search. The handbook is available upon request. There is no charge for the handbook but we do suggest that you send a self-addressed stamped envelope to help defray the cost of mailing when ordering.

Since October 1993, two novae have been discovered by amateur and professional astronomers. We congratulate Syuichi Nakano of Japan for his photographic discovery of Nova Cassiopeiae 1993 on December 7. We also congratulate Minoru Yamamoto for his photographic discovery of Nova Sagittarii 1994 on February 24.

We continue to encourage both AAVSO nova hunters and members of the AAVSO to send in their observations regularly. Your contributions are helpful in studying the frequency and distribution of novae in the Milky Way. A more detailed report about observations submitted and member participation will be provided in the fall 1994 annual report.

PHOTOELECTRIC PHOTOMETRY

Chair: Howard J. Landis
2870 Hwy. 20 West
Hampton, GA 30228-2413

As of April 22, we have received 1651 observations—a new high for photoelectric observations submitted this early in the fiscal year, bringing the total in the PEP archive to 11,763. We want to thank the following observers for their dedication:

Photoelectric Photometry Observations

Observer	*Location*	*No. Obs.*	*Observer*	*Location*	*No. Obs.*
Clark	MO	15	Smith	AZ	145
Crast	PA	29	Sorensen	Denmark	69
Curott	AL	9	Stoikidis	Greece	84
Dempsey	Canada	39	Snyder	NV	17
Fortier	Canada	12	Thompson	Canada	505
Hakes	IL	160	Wasson	CA	54
Isles	MI	20	Wasatonic	MD	64
Kohl	AZ	30	Wood	CA	211
Luedeke	NM	188			

Ray Thompson of Canada is our most prolific observer at this time with 485 in this fiscal year. He uses a personal computer with ACQUIRE software which saves time in getting the numerical data ready to send to me. We appreciate his dedication and perseverance.

In December, Headquarters issued a special alert notice to PEP observers on N Cas 93, the bright nova in Cassiopeia.

Rick Wasatonic has published data concerning TX Piscium, one of our AAVSO PEP program stars in IBVS No. 3912. The star has a variable period of about 215 days with varying amplitude on different cycles. He is continuing his observations of this star.

AAVSO Photoelectric Photometry Newsletter editor Mike Smith has produced two issues since the fall 1993 meeting. We thank Mike for accepting the position of newsletter editor.

A reminder: Any data you want to contribute to the AAVSO *must* be sent through the committee chair. The data must be observations in V light only, in the format established by the AAVSO, and must be raw data, not reduced data. This may be done via regular mail, e-mail, or computer disk. My regular mailing address is listed above; my e-mail address is 71510,2355@compuserve.com.

All technical questions about observing, instruments, reduction of data, or related computer programs should be addressed to the chair. Send all requests for finder charts to AAVSO Headquarters, as well as requests to receive the PEP newsletter. Send contributions to the PEP newsletter to Mike Smith at 6715 North Table Mtn. Road, Tucson, AZ 85718, USA.

RR LYRAE

Chair: Marvin E. Baldwin
8655 N. Country Road 775E
Butlerville, IN 47223-9220

Five observers have reported observations of RR Lyrae stars during this reporting period. We have experienced better than average coverage of these stars, with data sufficient to measure times of maxima reported on 36 stars. An estimated 1200 observations have been received. These data will be reduced to about 110 times of maxima.

We are pleased to report that two of these stars long known to have strong Blazhko effects have been well observed. These are XZ Cyg and SW Boo. Two stars of a similar nature needing more observation are SZ Hya and AR Her. Two RR Lyrae stars sufficiently observed in recent years to show that they demonstrate strong Blazhko effects are DF Ser and KZ Pup. These two stars need to be observed in a concentrated manner to determine if a Blazhko period can be detected.

SOLAR DIVISION

Chair: Peter O. Taylor
4523 Thurston Lane, Apt. 5
Madison, WI 53711

The Solar Division continues to be strongly supported throughout the world. Approximately 150 individuals and institutions submitted reports to the Division during the past six months.

Provisional and final values of American Relative Sunspot Numbers have been computed and supplied to the National Oceanic and Atmospheric Administration/ National Geophysical Data Center each month.

The program to monitor the ionospheric anomalies (SIDs) which are caused by solar flares continues to be active, even as Solar Cycle 22 rapidly declines. This information, together with our sunspot data, is included in each issue of *Solar-Geophysical Data.*

The Solar Division's two publications, *Solar Bulletin* and *SID Technical Bulletin*, have appeared regularly. The *Solar Bulletin* has a monthly international circulation of approximately 300. The quarterly newsletter, *SID Technical Bulletin*, is sent without charge to contributors to the program of indirect flare detection, and to others with a

special interest in this type of solar observation.

Arthur Stokes continues to provide an extraordinary amount of high-quality electronic expertise to those who participate in the SID detection program, and to improve the equipment we recommend for use in this endeavor. It would be difficult to overemphasize the contribution Arthur has made to this aspect of the Division's work.

Helen Coffey, editor of *Solar-Geophysical Data* and a Solar Division committee member, has contributed valuable advice and assisted in a number of other ways that have substantially facilitated our cooperative effort with the National Geophysical Data Center.

Finally, we extend our sincere appreciation not only to the members of the Solar Division Committee, but also to each of the observers who regularly supply sunspot estimates, recordings of ionospheric anomalies, and other information to us. The Solar Division could not exist without such outstanding contributions.

SUPERNOVA SEARCH

Chair: Rev. Robert O. Evans
63 Cassilis Street
Coonabarabran, NSW 2357
Australia

During the last six months three supernovae have appeared which have been either observed widely or discovered by amateurs.

The first was found by professional astronomers in NGC 4526. It proved to be of Type 1a, and reached magnitude 12. It was widely observed by many amateurs.

The second discovery was SN 1994I in NGC 5194 (M51). The initial discovery announcement by the IAU listed six amateurs as discoverers (Tim Puckett, Jerry Armstrong, Wayne Johnson, Doug Millar, Richard Berry, and Reiki Kushida), using CCD or visual means. Subsequently, other independent discoverers have also become known.

This supernova reached magnitude 13, and, at the time of this writing, was of unknown type, though possibly of Type 1c. It was unusual in a number of ways, including the fact that it was observed promptly in the radio with the Very Large Array (VLA).

The third discovery was made by Nicholas J. Brown of Western Australia, who visually discovered SN 1994L in NGC 2848 at magnitude 14.7. It was a Type 2 supernova found soon after maximum.

Congratulations to all the amateur discoverers, both CCD and visual. Wayne Johnson, Reiki Kushida, and Nicholas Brown have now each achieved their second visual discoveries.

Several of the fainter supernovae have been observed by amateurs in various countries using CCD systems. Also, several of the amateur supernova hunters have now made negative galaxy observations totalling over 10,000 without success in discovering a supernova. I know from experience how frustrating this can be, as several times I have run up tallies of negative observations greater than this between discoveries. Other observers have had success much more quickly than this. My own tally of negative galaxy observations has never been counted, but is now probably around 150,000.

• The *AAVSO Supernova Search Manual* was first circulated at the last meeting. It has already created interest, and will prove to be very useful for many observers in the coming months and years, especially as it is available for the cost of postage only.

• Supernova Search Committee Personnel: In recent revisions of committee listings, the name of John W. Griesé III was inadvertently omitted. My apologies to John.

TREASURER'S REPORT
OCTOBER 1, 1993 – MARCH 31, 1994

Theodore H. N. Wales
Treasurer, AAVSO
25 Birch Street
Cambridge, MA 02138

Income Accounts

Dues	Annual	$26457.32	
	Sustaining	13199.00	
			39,656.32
Grants, Contributions, Investment & Savings Income	Investment and savings*	183811.90	
	NOAA	2100.00	
	NSF	12000.00	
	NASA (Hipparcos)	55533.00	
	Mayall Fund	806.50	
	Pickering Fund	1949.23	
	Martin Estate	945.39	
	Contributions:	13540.92	
			270,686.94
Operations	Subscriptions & Alert Notice	11203.45	
	Observing Materials	637.55	
	AAVSO Circular	2261.50	
	Book Sales (including GCVS)	3724.46	
	Miscellaneous Sales	1367.90	
	Reimbursement for Data Services	1015.00	
	Meetings	2019.00	
	Monographs	195.50	
	Atlas	379.12	
	Miscellaneous	815.73	
	Telescope Sales	125.00	
			23,744.21
		TOTAL	$334,087.47

* This figure is net of $15585.31 paid in accrued interest when purchasing bonds in Endowment Fund Ford Fund.

Expenditure Accounts

Staff Costs	Salaries & Taxes	$158759.67	
	Health Insurance	2594.58	
	Contract Help	3825.00	
			165,179.25
Building & Utilities	Lights & Heat	2303.32	
	Insurance & Alarm	2286.00	
	Maintenance	568.65	
	Cleaning	970.00	
	Taxes	5629.81	
			11,757.78
General Operations	Telephone	2511.19	
	Postage	8795.95	
	General Office	4332.18	
	Copying Costs	3953.25	
			19,592.57
Publications	Printing	3912.62	
	AAVSO Atlas Royalties	101.49	
	Charts	204.83	
	Report 38	90.00	
			4308.94
Technical Operations	Solar Division	1943.42	
	Data Processing	2926.20	
			4,869.62
Meetings			5358.88
Miscellaneous	Cost of Books Sold	726.76	
	Cost of Goods Sold	4225.94	
	Other	11718.73	
			16,671.43
		TOTAL	$227,738.47