

ANNUAL REPORT OF THE DIRECTOR FOR FISCAL YEAR 1992-1993

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It is my privilege and personal pleasure to present to you my annual report for the fiscal year 1992–1993. This year is a special one both for the AAVSO and personally for me. We celebrate the 75th year of being incorporated as an association in the state of Massachusetts, and it is my 20th year as your director.

In my report I will share with you the highlights of our operations in this fiscal year, and also I will briefly summarize the road that you have taken with me in the past twenty years.

1. Data management and data processing

I would like to start with some very good news:

1.1. Computerization of archival data from 1911 to 1960.

I am very happy to report that last week we completed the project we started in 1981—computerization of our data from Day One in 1911 to 1960.

We now have in computer readable form 1,921,223 observations contributed by 1573 observers from 1911 to 1960. These observations, in addition to the over 5.4 million observations from 1960 to date, make up the AAVSO International Database of over 7 million observations.

Many, many thanks to our data entry technicians since 1981, and in particular, to Elena Kahn, who worked diligently to finish this project before the meeting, and to Mike Saladyga, who keeps the files in these computer data archives so carefully and efficiently.

However, our work is not finished with these 1.9 million observations. Before we make them part of our International Database, we have to process them.

1.2. Processing of the archival data

We have prepared a plan similar to that of monthly processing to process the data from 1911 to 1960. We processed what would be an equivalent to our monthly numbers of data, about 25,000 observations, and thus have identified the areas that we have to focus on, the problems that we may encounter and solutions to solve them. After processing the first 25,000 observations and keeping track of how long it took us to do this, we anticipate that it will take us about 2.5 to 3 years to process all of the 1.9 million observations and to make them part of the AAVSO International Database.

1.3. Upgrading computer facilities

Thanks to a grant from the Fund for Astrophysical Research in Memory of Theodore Dunham, Jr., we have added 1.8 gigabytes of hard disk to our computer system, bringing the cumulative storage capacity to 2.4 gigabytes. It is interesting that in 1981 our first minicomputer system had only 512 kilobytes of storage capacity, quite large for its time, and we now have some 4,687 times more—an increase essential to the processing of our archival data and to the efficient maintenance of current data.

1.4. Processing monthly incoming observations

I am happy to report that we are up-to-date in the computerization and processing

of incoming observations. Staying up-to-date is essential to the data support that we provide for so many variable star research projects involving satellites such as HIPPARCOS, IUE, EUVE, HST, ROSAT, and the recent Japanese satellite Astro-D.

1.5. Software development

We continue to develop programs to thoroughly check the processing of incoming data. As the last step in the data processing procedure, the monthly data, sorted by star and date, are checked by eye to identify any possible errors or discordances before they are added to the data files and the AAVSO International Database. In fact, we have established a procedure in which each month the discordant observations are identified and listed. Periodically we will alert the observers who have discordant observations so that they are aware of them and can determine the causes of the discordances.

Now that we have programs to process, graph, and evaluate our data efficiently, we are focusing our efforts on developing computer programs to analyze our data. We believe that in order to make the AAVSO International Database even more significant, we need to have the statistical tools to analyze the data.

1.6. Maintenance of the AAVSO International Database

The AAVSO International Database, now holding data over 5.4 million observations, is a dynamic one—we have access to any of these observations easily, we can identify the discordant observations, change the status of each record, and correct any errors. As we interact with the data more and more we are identifying areas that are problematic and need attention.

The database is backed up weekly on cassette tapes; periodically copies are made and stored in another location.

2. Requests for AAVSO data and other special projects

2.1. Requests for AAVSO data

We have responded to 256 requests for AAVSO data—the highest number of requests we have ever responded to within a fiscal year. These included providing data support on variable stars for NASA, ESA, Japanese, and German Space Agency satellites, such as IUE, HIPPARCOS, HST, EUVE, ROSAT, Astro-D, and ORFEUS, which accounted for 100 of the 256 requests. A list of the individual requesting information as well as their locations and affiliations is given in Table 4 at the end of my report. Figure 1 is the histogram of the annual number of data requests the AAVSO has filled since 1974. In addition to these data requests, the AAVSO responded to 191 requests for light curves from members and observers during this fiscal year.

The types of stars for which data were requested are given in the list below and in Figure 2.

- 1) Cataclysmic variables (43%): dwarf novae (24%); novae, nova-like, recurrent novae, and supernovae (19%);
- 2) Long period variables (24%): Mira (15%); semiregular (9%);
- 3) R Coronae Borealis stars (7%);
- 4) Cepheids (5%);
- 5) Eclipsing binaries (3%);
- 6) Symbiotic stars—Z Andromedae type (2%);
- 7) RV Tauri stars (1%);
- 8) Miscellaneous (15%)—irregular variables, suspected variables, nebular variables and T Tauri stars, the Sun, and variable stars in general.

The areas in which AAVSO data or services have been used this year are given in the list below and in Figure 3.

- a) Multi-wavelength data correlation (31%);
- b) Scheduling observing runs mostly for satellites and ground-based observations (21%);
- c) Reference materials (16%);
- d) Data for the IAU Circulars (10%);
- e) Data analysis (7%);
- f) Setting up observing programs (6%);
- g) Science projects (6%);
- h) Simultaneous observing for observing programs with satellites and ground-based telescopes (3%).

Life was simpler about five years ago in responding to data requests, because usually the astronomer or researcher asked for and would be sent copies of hand-plotted AAVSO light curves. Even though our data were in computer-readable form, we rarely sent them out electronically, because they were stored on magnetic tapes at the Harvard-Smithsonian Center for Astrophysics (CfA), and we did not have the means to access them easily. However, once we developed our own computer capabilities and transported all our data to Headquarters, and once we were given e-mail access through CfA, we began receiving an increasing number of requests for the electronic transmission of our data. These requests are quite time-consuming and difficult to fill, because our policy is to evaluate the data before transmission to ensure high quality. Even though we have

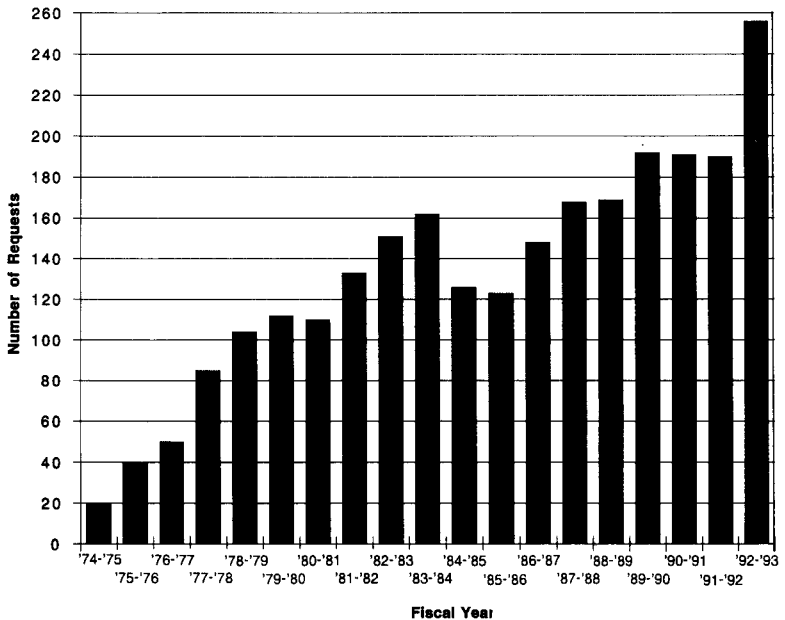


Figure 1. Histogram of the number of data requests filled by the AAVSO since 1974.

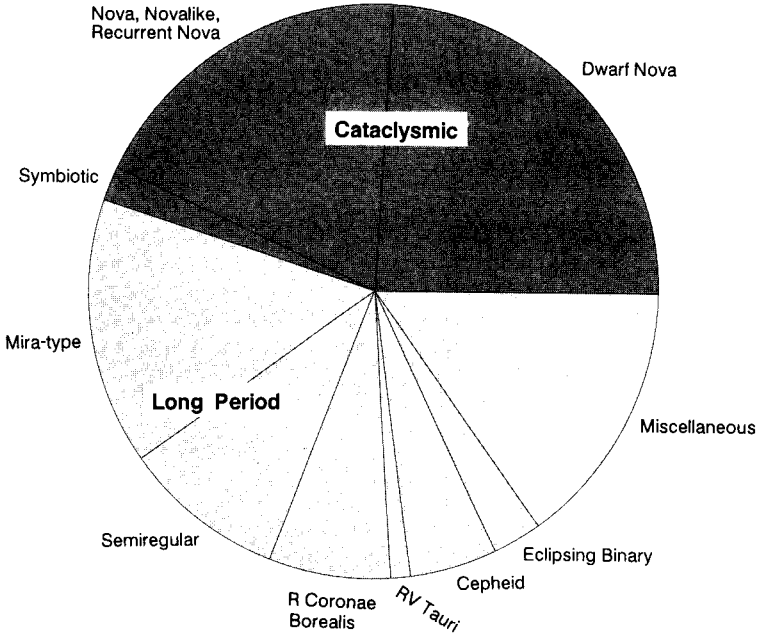


Figure 2. Types of variable stars for which AAVSO data were requested in fiscal year 1992-1993.

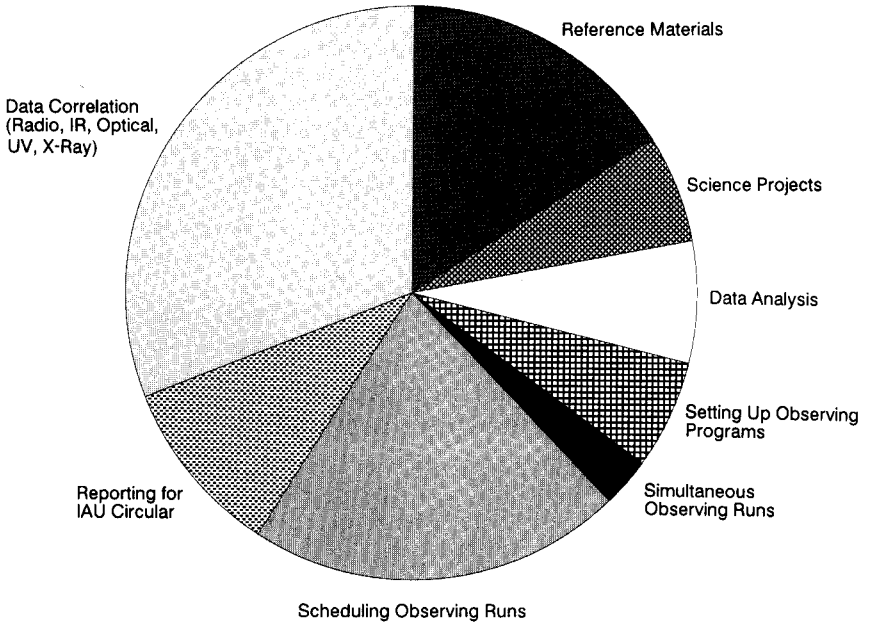


Figure 3. Areas in which AAVSO data and services were used in fiscal year 1992-1993.

developed methods to expedite data evaluation, the process takes as much time as if we were publishing the data. This year we sent out data electronically for 76 requests.

I would like to share with you the highlights of some of the data requests.

- Dr. Charles Townes from the University of California at Berkeley requested long term light curves on 13 Mira-type and semiregular long period variables to use in his infrared spatial interferometry research studying the characteristics of dust shells around these stars. Dr. Townes later wrote that the AAVSO data had been extremely useful in the interpretation of their data, particularly so with alpha Ori.

- Some requests involved large amounts of data over many decades, such as those from Dr. A. Le Squeren from Paris Observatory, France, who wanted to correlate her long term radio observations with optical data and requested 16 years (about 6000 days) of AAVSO data on 12 well-observed stars. Upon receipt of the data she found them so important to her research that she requested data on an additional 6 stars. She was very appreciative of the AAVSO.

- Dr. Michael Richmond from Princeton University requested data on 10 supernovae to search for a relationship among visual and CCD (V) magnitudes, observer response, and the color of the supernova. This request was a particularly difficult one to fill, because often comparison star magnitudes of supernova charts are revised several times before the final version. These revisions, of course, affect the magnitude estimates of the supernovae. Thus, before the data are disseminated each observation has to be checked to see if it is affected by the revision of the comparison star magnitudes, and if it is, then it has to be adjusted.

- In another instance, Dr. H. Satoh from the University of Tokyo, Japan, requested 26 years of data on 10 stars (about 600,000 observations), along with our 75-year maxima and minima data on long period variables.

We are delighted that our unique long term data are very much sought after and used for multiwavelength data correlation and data analysis. The AAVSO will be included in most of the publications resulting from these studies, in that two years ago the AAVSO Council adopted the policy that whenever AAVSO data are used substantially in a paper, the AAVSO Director or her designate, representing the AAVSO, should be a co-author to provide input in the analysis and interpretation of the data and to be responsible for the quality of the data.

Our optical data and our services have been particularly important in scheduling and executing observations with space satellites.

Dr. Ed Sion from Villanova University continues to be interested in studying the white dwarf component of cataclysmic variables, particularly that of VW Hyri with Hubble Space Telescope (HST). For this, he needs to observe the system at minimum; he requested information as to when the normal and the superoutbursts of VW Hyi would be occurring during the year, so that he could request HST observations outside those times.

After studying the long term behavior of VW Hyi, I informed Ed that the best time to observe it at minimum, avoiding its superoutburst, would be in late summer, before September. Thus, Ed was given observing times with HST initially in August, but due to HST re-scheduling they were changed to Sept. 16, Oct. 24, and Nov. 13—unfavorable times for observing VW Hyi at minimum. Near the scheduled HST observing runs, our southern hemisphere observers kept a very close eye on VW Hyi and kept us continuously informed. On September 16, just a few hours after Ed's HST run was over, Danie Overbeek phoned informing us that VW Hyi was brightening. Luckily, Ed just avoided the start of the outburst and obtained a quiescent high-resolution spectra closest

to the start of an outburst of any obtained to date. As to his observing run on October 24, as predicted the star went into superoutburst on October 21 and Ed obtained excellent data of it, but not what he had planned for. He is thinking of requesting additional time, because if he had been given the observing times initially scheduled, he would have obtained the data he wanted.

Another HST project we are collaborating on with Ed Sion is observing AM Herculis in its down state to study the magnetic white dwarf component of this system. We are scheduled to observe AM Her if it goes down before the HST servicing mission in the beginning of December.

Another star of particular interest to a group of astronomers at the Space Telescope Science Institute and the University of Washington is the dwarf nova IP Pegasi. They are planning to use the HST to monitor IP Peg on its way down from an outburst in order to better understand the changes that occur in the accretion disk at the end of an outburst, and they have asked us to alert them every time an outburst occurs. Twice this year when our observers informed us of an outburst we alerted the astronomers, but unfortunately in both cases the outbursts were short, lasting only few days, and the HST could not be scheduled. However, during IP Peg's outburst in May, thanks to phone calls from our observers in Hawaii and Europe, we alerted Dr. Paula Szkody, one of the astronomers involved. Within 5 days HST was scheduled to observe IP Peg for 3 nights as it was on its way down. Paula sent me the following electronic message:

Thanks to your group's notification, IP Peg is now scheduled for HST observation beginning Wednesday night and continuing through Saturday. Please give those observers who found it up a special thank you from our team!

In April Paula phoned asking if we had observations of the magnetic nova-like variable star VV Pup that the EUVE satellite had recently observed. She needed our observations to determine the optical state of this magnetic cataclysmic variable. Unfortunately, we did not have observations during her observing run, but we had observations both before and after, during which VV Pup was in its bright state. During her invited talk at the special EUVE session of the AAS Meeting in Berkeley, California, Paula strongly made the point that if guest observers do not know when the variable stars they have proposed for EUVE observing are scheduled to be observed with the satellite, AAVSO observers cannot be alerted and thus no optical data may be available for correlation with the EUVE data. The day after her talk, I had a meeting with Dr. Roger Malina, the co-principal investigator of EUVE, to discuss how to coordinate future optical monitoring of variable stars that EUVE will be observing.

We have also provided information and research opportunities to several interested enthusiasts, particularly young students. One of these students is Ben D. Oppenheimer, a high school student from Concord Academy, whom I met after my talk there. Ben, who has been interested in astronomy since age four, already knew about AAVSO, and in fact had requested data last year. After I met Ben, he wrote:

I would be very interested in helping you this summer. I could be an extra hand helping you with anything that you need whether it is looking for the position of a certain star or making coffee. It would be a learning experience for me and free help for you.

With an offer like that, how could we refuse? Ben has since become a part-time researcher at the AAVSO, studying AAVSO data. He presented a paper at this annual meeting (printed in this issue of the *Journal*, pages 105–109), and will also be presenting

this work at the AAS meeting in January.

We have also been active in the past fiscal year helping students with their science projects. We have provided many students with information and observing projects. Earlier this year a father from Georgia called to tell us that his 13-year-old son was most interested in astronomy and had been interested since he was very young. His son wanted to do a project on variable stars and wondered if we could help him. The stars that he was most interested in were Cepheids, so Elizabeth Waagen put together a nice package of information for this student. Later we provided further information for his science project, which was, from the following letter we received from him, very successful:

I won Grand Prize, first place in Earth and Space Sciences in Junior competition at the Georgia State Science and Engineering Fair. I also won the Georgia Geological Society Award, which is geared to exceptional projects in Earth and Space Science, and the Gamma Sigma Delta award for outstanding research.... I made a total of 248 observations over 33 nights. I then constructed 8 light cycles for the Cepheids I observed, and obtained their distances. I now even know my project for next year—to build a CCD camera and a split-ring mount so I can make 'Digital Astrophotos' of star clusters and obtain the age of them by the Hertzsprung-Russell diagram.

Variable stars attract the interest of astronomy enthusiasts for very special reasons, as in the case of William Busch. He wrote:

Because I have a very special friend named Myra, I have decided to do some research on, and some photography of, the variable star Mira. ... Are there charts or formulas available that would enable me to determine Mira's magnitude when she becomes visible to me later this year?

These are only a few examples of the many special requests that come in the mail, via electronic mail, fax, and telephone. It is truly a challenge to keep up with the requests for AAVSO data!

2.2. Special projects

In addition to the record number of requests for AAVSO data that we filled this year, we continued to be involved in a number of special projects.

2.2.1. HIPPARCOS satellite

The High Precision Parallax Collecting Satellite (HIPPARCOS) mission was formally terminated in August 1993. In a news release, Project Scientist Dr. M. Perryman stated that

this satellite has contributed unique information that will take prominent place in the history and development of astrophysics.... When our final results are published in 1996 there will be some very interesting new insights into the nature of our galaxy—its structure and its evolution will emerge.

Throughout the life of the satellite the AAVSO provided data support for the observations of long period variable stars to determine the duration of the observing time for the 243 long period variables. Financial support for our participation has been provided through grants from NASA's Astrophysics Division.

This year the data support for the observations of long period variable stars for this

mission continued, although at a much lower rate due to mechanical problems with the satellite, particularly with its gyros. In addition, to further help with the calibration of HIPPARCOS photometry, we prepared four-color (B,V,R,I) CCD finder charts on 6 HIPPARCOS stars (see S. Howell, J. Mattei, and P. Benson 1992, *J. Amer. Assoc. Var. Star Obs.*, 22, 2), and distributed them to our CCD observers for multicolor CCD photometry of these stars. We are now compiling the CCD observations on these stars and will be transmitting them to the Hipparcos Photometric Team Leader, Dr. M. Grenon.

The HIPPARCOS Variable Star Coordinator, Dr. M.-O. Mennessier, her assistant, and I are working on a collaborative paper studying correlations of various light curve parameters and physical properties of long period variables. The study uses our 75-year maxima and minima dates and magnitudes and observations as its basic data set. Another assistant of Dr. Mennessier's finished his Ph.D. thesis on *Pseudoperiodicities of Mira Variables*, for which he used AAVSO data extensively. M. Lysaght, our former technical assistant, who helped us with the Hipparcos project, is working toward her Ph.D. in astronomy at the University of Massachusetts. Thus, our involvement with HIPPARCOS not only helped the satellite mission, but also helped three young people in obtaining advanced degrees in astronomy.

2.2.2. EUVE satellite

During the all-sky survey of the Extreme Ultraviolet Explorer (EUVE) satellite from August 1992 through February 1993, our observers around the world monitored 81 variable stars suspected to be EUV sources. These sources included cataclysmic variables, flare stars, RS Canum Venaticorum stars, and a few active galactic nuclei. Since periods of high activity cannot be predicted for these objects, accurate interpretation of EUVE observations needed observations in optical wavelengths. We received over 29,500 observations from 309 observers during the all-sky survey. Each week we compiled the reported observations and sent them electronically to the Center for EUV Astrophysics in Berkeley, California, for correlation with the EUVE data. We have been able to provide data support for EUVE thanks to a NASA grant through the Center For EUV Astrophysics at the University of California.

We continued to be involved with EUVE during its pointed phase of target-of-opportunity (TOO) observations. One such case was with SS Cygni. Dr. Chris Mauche from Lawrence Livermore National Laboratory in California was scheduled to observe SS Cyg with EUVE when it went into outburst. The TOO observations were triggered when we received phone calls and electronic messages from W. Dillon, Texas; J. Nordby, Minnesota; W. Albrecht, Hawaii; and A. Pereira, Portugal, alerting us to the start of the outburst on August 16. We immediately informed Dr. Mauche (who was en route to a meeting), the EUVE Deputy Project Scientist, and the EUVE Science Operations Center. The satellite turned to SS Cyg and the observations started within eight hours of our notification. This outburst of SS Cyg was an infrequently-occurring anomalous outburst, in which the rise to maximum is slow. EUVE observed it continuously for one whole week (192,000 seconds) and obtained a spectacular spectrum and data on it.

While the satellite was observing it, Dr. R. Malina, co-principal investigator of EUVE, wrote, "The SS Cygni spectrum is now bright enough that it is even visible to the eye in the images of the spectrum during orbital daytime!!" We will be preparing a collaborative paper on this project, and Chabot Observatory Planetarium in California is making a planetarium show on it titled "Hot News From Space—SS Cygni Caught in the Act."

2.2.3. ORFEUS Mission

Orbiting and Retrievable Far and Extreme Ultraviolet Spectrograph (ORFEUS),

the first mission in the ASTROS-SPAS series of NASA and the German Space Agency (DARA), was launched aboard NASA's space shuttle Discovery, after the launch had been delayed four times, and the satellite was deployed on September 9. The primary goal of this five-day mission was to observe stars that emit most of their light in the ultraviolet region of the electromagnetic spectrum, to help understand the evolution of these stars and their interaction with the interstellar medium. Six cataclysmic variables were among the observing targets. Thanks to our observers' close monitoring, we provided continuous brightness information on these stars, and ORFEUS obtained data during the outburst states of these stars. In addition, we informed the satellite team of the discovery by our member, Dr. William Liller, of a nova in Sagittarius (Nova Sagittarii 1993), which the satellite was able to observe. The nova did not show any far ultraviolet (FUV) flux. Later, we received this message from Dr. Robert Stachnik, NASA's ORFEUS Program Scientist:

This is to express the thanks of the ORFEUS-SPAS team and the NASA Astrophysics Division for the assistance of the AAVSO in connection with the recent flight of ORFEUS. The mission was highly successful and some of the most exciting observations were the result of AAVSO efforts. While AAVSO is justly proud of its designation as an amateur organization, that designation is appropriate in only the most restrictive sense. The professionalism of your membership and of the Cambridge office is legendary.

So it has been a very exciting project to be involved in.

2.2.4. AAVSO data preparation for NASA's Astronomical Data System (ADS)

The preparation of AAVSO data on 75 stars that have been monitored with various NASA and European satellites for the time interval 1978-1990 continues. We have had detailed discussions with the astronomers in charge of ADS as to how to put the data into the ADS files. We already have a file in the ADS giving information on the stars that we have in our observing program, the extent of the data, and the level of coverage.

3. AAVSO educational projects

3.1. Hands-On Astrophysics

Work on this major AAVSO educational project is proceeding well: (a) we have now selected the stars that we will include in the program, in five constellations—Cygnus, Cassiopeia, Ursa Major, Cepheus, and Auriga; (b) Charles Scovil has started to prepare the finder charts for 70 variable stars in these constellations; (c) we have started writing the student's and teacher's manuals. Jeff Lockwood, a very experienced high school teacher, is writing these together with John Percy, Michael Saladyga, and me; and (d) we have recently selected the astrophotographer who will prepare the slides.

8.2. Partnership in Astronomy

This very successful project connects four amateur astronomers in the Boston area, who have home built observatories and telescopes, with their local high schools. Through talks and star parties, we have reached about 900 students, teachers, and parents. The team has developed six simple, hands-on observing projects for students to do during the summer. In November we will continue with more talks, star parties, mirror grinding and telescope building, and teachers' workshops.

4. Summary of observations

Each month we receive observations from observers around the world. Increasing numbers of variable star groups around the world are submitting their observations to the AAVSO as well as keeping a database of their own. This assures that their observations are part of the AAVSO International Database and are disseminated to the astronomical community, upon request, and through AAVSO publications.

Until four years ago all observations came by mail. Today, about 80% come by mail (one-fifth of which are computer printouts); about 20% come electronically (e-mail or diskettes).

During fiscal year 1992–1993, we received 305,691 visual and photoelectric observations from 576 observers around the world. These totals include 101,011 observations from 219 observers in 39 states and 1 territory of the United States, and 206,195 observations from 357 observers in 36 countries. New Mexico (16,792 observations), New York (11,047), and Massachusetts (8,433) lead the states in the USA, while Israel (29,950), South Africa (23,465), Hungary (19,858) and Germany (19,657) lead the countries abroad.

Table 1 lists the number of observers and the total observational contribution from each country this fiscal year. Table 2 gives the same information for each state in the USA. Table 3 is an alphabetical list of observers, giving each person's observing initials, name, location, and annual totals of observations and inner sanctum observations (magnitude 13.8 or fainter, and/or "fainter than" 14.0 or fainter).

This year 37 observers reported between 1000 and 2000 observations, 9 between 2000 and 3000, 7 between 3000 and 4000, and 6 between 4000 and 5000. Paul Vedrenne reported 5151 observations, Michael Moeller 5318, Alfons Diepvens 5452, Laszlo Szentasko 5508, Marvin Baldwin 5804, Eran Ofek 6019, John Bortle 6616, Sergio Dominguez 6739, and Gerald Dyck 8203. Our top three observers this year are Danie Overbeek with 16,617 observations, David York with 16,741, and Ofer Gabzo with 20,420.

David York sent in the highest number of inner sanctum observations with 8913 (53% of his observations), followed by Gerald Dyck (5061, 62%) and Laszlo Szentasko (3060, 56%).

We have received 1439 photoelectric observations from 15 of our photometrists. Howard Landis generously devotes his time to see that all our photoelectric data are computerized, reduced to a standard format, and archived by star. Scientific papers continue to be published using AAVSO photoelectric data, particularly by Dr. John Percy, who also serves as an advisor to the our photoelectric photometry program.

My very special thanks to each and every observer for their contribution, whether one observation or thousands. Our observers are what make the AAVSO what it has been and what it is—and we salute them.

4.1. International Cooperation

We acknowledge with appreciation the observations sent to the AAVSO by members of the following variable star associations, either individually or as a group, for inclusion in the AAVSO International Database for dissemination to the astronomical community:

- a. Asociacion Argentina Amigos de la Astronomia;
- b. Association Française des Observateurs d'Étoiles Variables (France);
- c. Astronomical Society of Southern Africa, Variable Star Section;
- d. Astronomischer Jugendclub (Austria);
- e. Astronomisk Selskap (Scandinavia);

- f. Berliner Arbeitsgemeinschaft für Veränderliche Sterne (Germany);
- g. British Astronomical Association, Variable Star Section (England);
- h. British Astronomical Association of New South Wales (Australia);
- i. Israeli Astronomical Association, Variable Star Section;
- j. Liga Ibero-Americana de Astronomia (South America);
- k. Nederlandse Vereniging Voor Weer-en Sterrenkunde, Werkgroep Veranderlijke Sterren (Netherlands);
- l. Norsk Astronomisk Selskap, Variable Stjernegruppen (Norway);
- m. Planetario e Observatorio Astonomico do Colegio Estadual do Parana (Brazil)
- n. Magyar Csillagászati Egyesület, Változócsillag (Hungary);
- o. Red de Observadores de Estrellas Variables —MIRA (Spain);
- p. Royal Astronomical Society of Canada;
- q. Royal Astronomical Society of New Zealand, Variable Star Section;
- r. Uniao Brasileira de Astronomia, Variable Star Commission (Brazil);
- s. Unione Astrofili Italiani (Italy);
- t. Variable Star Observers League of Japan;
- u. Vereniging Voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium).

5. Membership

This year at the 82nd Spring Meeting, held in Berkeley, California, we elected 41 new members, two of whom joined as Sustaining and two of whom joined as Junior Members. At the 82nd Annual Meeting, held in Cambridge, Massachusetts, we elected 34 new members, three of whom joined as Sustaining Members and four of whom joined as Junior Members.

This year 10 members changed their membership from Annual to Sustaining, thus supporting the operation of the Association doubly with their dues.

6. AAVSO publications

The following were published by the AAVSO during this fiscal year:

- a. *Journal of the AAVSO*, Volume 20, No. 2, edited by Charles A. Whitney, Elizabeth O. Waagen, Tanja E. Foulds;
- b. *Journal of the AAVSO*, Volume 21, No. 1, edited by Charles A. Whitney, Elizabeth O. Waagen, Tanja E. Foulds;
- c. *AAVSO Bulletin 56*, the 1993 Predicted Dates of Maxima and Minima of 561 Long period Variable Stars, prepared by Janet A. Mattei;
- d. *AAVSO Circular*, Nos. 264–275, edited by John E. Bortle with assistance from Charles E. Scovil and Robert Leitner;
- e. *AAVSO Alert Notices*, Nos. 163–178, prepared by Janet A. Mattei;
- f. *AAVSO 1993 Ephemeris for Eclipsing Binaries*, prepared by Gerard Samolyk, Marvin E. Baldwin;
- g. *AAVSO 1993 Ephemeris for RR Lyrae Stars*, prepared by Gerard Samolyk, Marvin E. Baldwin;
- h. *AAVSO Photoelectric Photometry Newsletter*, Vol. 13, No. 1, edited by Michael Smith;
- i. *AAVSO Solar Bulletin*, Vol. 48, Nos. 10–12; Vol. 49, Nos. 1–9, edited and published by Peter O. Taylor.
- j. *SID Technical Bulletin*, Vol. 3, No. 4; Vol. 4, Nos. 1–3, prepared by Arthur J. Stokes and Peter O. Taylor;

- k. *AAVSO Newsletter*, No. 10, prepared by Tanja E. Foulds;
- l. *AAVSO Supernova Search Manual*, by Robert O. Evans;
- m. *Women in the History of Variable Star Astronomy*, by Dorrit Hoffleit;
- n. *The Story of the AAVSO, Observers and Observations 1911–1993*, updated by Michael Saladyga.

My very sincere thanks and appreciation go to Marvin E. Baldwin, John E. Bortle, Robert O. Evans, Tanja E. Foulds, Dorrit Hoffleit, Robert Leitner, Michael Saladyga, Gerard Samolyk, Michael Smith, Arthur J. Stokes, Peter O. Taylor, Elizabeth Waagen, and Charles Whitney for the contribution of their time, wisdom, and expertise in the preparation of the above publications which represent the AAVSO in the astronomical community and in astronomical literature.

7. Other publications with AAVSO participation

- a. Predicted maxima dates of bright long period variables and ephemerides of a few easy-to-observe stars were published by J.A. Mattei, together with an article on “X Persei—Variable Star of the Year” with J.R. Percy, in the 1993 *Observer's Handbook* of the Royal Astronomical Society of Canada.
- b. Monthly predictions of maxima dates of bright long period variables were published by J.A. Mattei in *Sky & Telescope*.
- c. “On the Long-Term Behavior of SS Cygni” was published by J.K. Cannizzo and J.A. Mattei in *The Astrophysical Journal*, **401**, p. 642, 1992. Also published in *Bulletin of the American Astronomical Association*, **24**, 4, p. 1285, 1992.
- d. “Long Term AAVSO Observations of the Symbiotic System CH Cygni” was published by J.A. Mattei and M. Karovska in *Bulletin of the American Astronomical Association*, **24**, 4, p. 1286, 1992.
- e. “Long Period Variable Stars in the Hipparcos Observing Program” was published by D. Barthes, H. Boughaleb, F. Figueras, E.G. Foster, J.A. Mattei, M.O. Mennessier, and E.O. Waagen in *Highlights of Astronomy*, **9**, p. 422, 1992.
- f. “The Input Catalogue Tested by the First Hipparcos Observations, II. The Photometry and Variable Stars” was published by M. Grenon, J. Mattei, and M.-O. Mennessier in *Highlights in Astronomy* **9**, p. 389, 1992.
- g. “Superhumps in VY Aquarii” was published by J. Patterson, H.E. Bond, A.D. Grauer, A.W. Shafter, and J.A. Mattei in *Publications of the Astronomical Society of the Pacific*, **105**, 683, p. 69, 1993.
- h. “EUVE All-Sky Survey Observations of the Dwarf Nova VW Hydri” was published by C.W. Mauche, J.K. Warren, J.V. Vallerger, K. Mukai, and J.A. Mattei in *Bulletin of the American Astronomical Association*, **25**, 2, p. 863, 1993.
- i. “Lyman Alpha Absorption in Quiescent Dwarf Novae” was published by A. Holm, H. Lanning, J. Mattei, and E. Nelson in *Bulletin of the American Astronomical Association*, **25**, 2, p. 909, 1993.
- j. “Long-Term Variation in Dust Production in R Coronae Borealis” was published by G.C. Clayton, B.A. Whitney, and J.A. Mattei in *Publications of the Astronomical Society of the Pacific*, **105**, 693, p. 832, 1993.
- k. “The Discovery and Observation of Nova Cygni 1992 by Amateur Astronomers” was published by J.A. Mattei in *Bulletin of the American Astronomical Association*, **25**, p. 737, 1993.

8. Meetings attended and talks given

This fiscal year, especially the first part of it, was a very busy one with various trips.

Thanks to an international travel grant from the American Astronomical Society (AAS), I was able to attend the Second Variable Star Symposium of LIADA (the Astronomical League of South America) in Uruguay. Before the meeting I visited, in addition to several other AAVSO members in Argentina, Dr. Jaime Garcia, who invited me to give a talk at the Copernicus Institute in Buenos Aires, where he works. I also visited Sergio Dominguez, our most active member in South America.

I found out that I could come back via Chile without paying additional air fare, so I visited our member Dr. William Liller and saw his observatory, the Cerro Tololo Inter-American Observatory, which is part of the National Optical Astronomy Observatory. I also visited the European Southern Observatory, where I participated in photoelectric observations with the telescope that was used to obtain photoelectric sequences for the new charts of variables we added to our program for the HIPPARCOS satellite.

In January I gave a talk on Nova Cygni 1992, discovered by AAVSO member Peter Collins, and a poster paper on CH Cygni at the AAS meeting in Phoenix, Arizona.

A few weeks later I went to Mexico City, where Dorrit Hoffleit and I were invited to the celebrations commemorating 50 years of service to astronomy by Dr. Paris Pishmish, a Turkish astronomer who is a close friend of Dorrit and me and one of my mentors—and who introduced me to Dorrit and to the Maria Mitchell Observatory. While there I gave a talk about the AAVSO.

Three days later I attended ceremonies in Tucson to receive the George Van Biesbroeck Award and to give a talk on the AAVSO.

Two weeks after that, Priscilla Benson, Steve Howell and I were granted observing time at Kitt Peak National Observatory. We spent six nights obtaining measurements for comparison stars for multicolor CCD finder charts for some of the HIPPARCOS long period variable stars. This was the first time that observing time was granted for a specific AAVSO project at a national observatory.

In June I attended the meeting of the AAS at Berkeley, CA, which followed our spring meeting there.

- 8.1. Below is the list of 19 talks and selected poster papers that I have given during the year:
- a. AAVSO and Variable Stars (Copernicus Institute, Buenos Aires, Argentina);
 - b. Chart Making (LIADA meeting, Montevideo, Uruguay);
 - c. Cataclysmic Variables (LIADA meeting, Montevideo, Uruguay);
 - d. The AAVSO and Cooperation between Amateur and Professional Astronomers (LIADA meeting, Montevideo, Uruguay).
 - e. Nova Cygni 1992 (AAS Meeting, Phoenix, AZ);
 - f. The AAVSO and Its Educational Initiative—Astronomer for the Day (AAS Meeting, Phoenix, AZ);
 - g. Long-Term AAVSO Observations of the Symbiotic System CH Cyg (a poster paper with Margarita Karovska; AAS Meeting, Phoenix, AZ);
 - h. Long-Term Observations of SS Cygni (a poster paper with John Cannizzo; AAS Meeting, Phoenix, AZ).
 - i. The AAVSO and Its Observing Programs (University of Mexico).
 - j. AAVSO and Its Space Research on Variable Stars (University of Arizona, upon the receipt of the George Van Biesbroeck award).
 - k. Variable Stars and Space Research (RASC, Toronto Center).
 - l. What's New at the AAVSO (University of Toronto).
 - m. AAVSO and Highlights in Astronomy (Concord Academy, MA).

- n. Highlights in Astronomy (youth group in Lowell, MA).
- o. Observing Programs in Variable Stars (Merrimack College, on the occasion of the opening of their observatory in Merrimack, MA).
- p. Variable Star Observers, Space Research, and Science Education (meeting of the American Physical Society and the American Association of Physics Teachers in Washington, D.C.).
- q. Variable Stars, Space Research, and Science Education (Central Pennsylvania Astronomers Neighborhood Meeting, Dickinson College, Carlisle, PA).
- r. The Need for and Usefulness of Variable Star Observations (delivered at two Workshops in Research Techniques for Undergraduate Teachers at Harvard University, Cambridge, MA).
- s. Observing Programs in Variable Stars (Undergraduate Teachers' Workshop, Boulder, CO).

Several members have also given talks on the AAVSO, particularly John Percy, who gave a talk in New Zealand on the AAVSO and our photoelectric photometry program. During his trips as a Shapley Lecturer, John always includes the AAVSO and its activities in his talks, and we are very grateful. John Griesé also presented a poster paper on the AAVSO at the Astronomical Society of the Pacific (ASP) Meeting. My special thanks to you all for being ambassadors for the AAVSO.

9. Personnel at Headquarters

An executive is as good as her staff. Our association is extremely fortunate to have a special group of dedicated, hardworking, conscientious, team-spirited, caring, and very nice people as staff members at Headquarters to run the operations of the association.

Presently the staff consists of eight full-time employees (including myself), one part-time employee, one summer research intern, and two volunteer assistants. My sincere thanks and appreciation to Elizabeth O. Waagen, my Senior Technical Assistant since 1979; Grant Foster, our Computer Specialist since 1989; Michael Saladyga, our Technical Assistant since 1985; Pamela Moffat, our Administrative Assistant since 1990; Tanja E. Foulds, our Meeting Organizer and Project Coordinator since 1991; Barbara J. Silva, our Data Entry Technician since 1979; William K. Mackiewicz, our Technical Assistant since 1992; Elena Kahn, our technical assistant since 1993; Sara J. Beck, our part-time Technical Assistant; Ben D. Oppenheimer, our summer research intern; and Frank McCarrison and Dorothy Harvey, our loyal volunteers.

10. Acknowledgements

It is always a pleasure for me to express my sincere thanks to all those who have contributed so much to the association during the year.

At this time we remember Clint Ford with fond memories, love, and gratitude, for his generosity throughout his membership, providing us with a home, and with a legacy—the Clinton B. Ford Fund—that assures a sound future for the AAVSO.

We remember some of the other giants of the association—William Tyler Olcott and Edward Pickering, who founded the association in 1911; Leon Campbell, the first Recorder; Harlow Shapley; members such as David Pickering, Ernest Yalden, Charles Elmer, Leslie Peltier, Cy Fernald, Carolyn Hurless, and Helen Hogg.

We express our sincere thanks to Margaret Mayall, the second Recorder and the first Director of the AAVSO, for carrying on the activities of the association so capably and with such dedication, particularly through the difficult times after we left Harvard

College Observatory; and to Dorrit Hoffleit, who has made the AAVSO her very special association and has contributed so much to it.

Our appreciation and thanks go to our dedicated, devoted, and untiring observers, —over 4000 since 1911—the unsung heroes of the AAVSO who make this association unique, sought after, and vital to variable star research. Special thanks to all those observers who have contributed to special observing programs this past year in which our assistance has been requested again and again by astronomers.

Our thanks to members who support the AAVSO with their dues and special thanks to those who have generously contributed above their dues so that we can serve you our members and the astronomical community well.

10.1. Grants

We have been very fortunate to have received strong support from institutions and government agencies this year. We gratefully acknowledge the following grant awards:

a. National Aeronautics and Space Administration (NASA), for the grant awards to provide the vital data support for the HIPPARCOS satellite in the observations of large amplitude variable stars; to catalogue AAVSO optical data for the NASA Astrophysical Data Systems and the IUE; to provide data support for the EUVE in the observations of cataclysmic variables; to provide astronomical partnerships between our local members and middle and high schools; to collaborate with Dr. Paula Szkody of the University of Washington in providing information and data support for the observations of dwarf novae with the IUE; to collaborate with Dr. Ed Sion of Villanova University in providing information and data support for the observations of cataclysmic variables with the HST.

b. National Science Foundation (NSF), for the Education grant for the preparation of our project Hands-On Astrophysics: Variable Stars in the Physics/Math Lab.

c. National Oceanographic and Atmospheric Administration (NOAA), for the continued grant award for the operation of the activities of our Solar Division.

d. Fund For Astrophysical Research in Memory of Theodore Dunham, Jr., for purchasing 1.8 Gigabytes of hard disk memory for our computer system.

10.2. Institutional support

Our very special thanks to the following institutions:

a. Kitt Peak National Observatory (KPNO) of the National Optical Astronomy Observatories, for granting observing time to P. Benson, S. Howell, and me to calibrate long period variable star fields for multicolor CCD observations, and to the KPNO staff for their assistance during our observing run.

b. Stamford Observatory, for allowing Charles Scovil and John Griesé to use the 22-inch telescope for making variable star observations, and for allowing Charles Scovil and Robert Leitner to use the facilities of the Observatory to prepare charts and the *AAVSO Circular*.

c. Smithsonian Astrophysical Observatory, for the computer time granted to us through the efforts of Professor Owen Gingerich and Barbara Welther.

My sincere thanks go to our committee chairs and co-chairs Marvin Baldwin, Kenneth Beckmann, Priscilla Benson, Thomas Cragg, Robert Evans, Howard Landis, Wayne Lowder, Charles Scovil, Peter Taylor, Gary Walker and Charles Whitney, who give so generously of their time and wisdom to carry out the work of their respective committees.

My very special thanks to our President Thomas R. Williams, and our Treasurer, Theodore H. N. Wales, for the management and financial expertise and wisdom they provide, and for giving so generously of their time to the association.

I very much appreciate the support of our officers: Martha Hazen, our secretary;

Wayne Lowder and Paul Sventek, our vice presidents; and our Council members Mark Adams, Priscilla Benson, Louis Cox, Dorrit Hoffleit, Al Holm, Walter Scott Houston, George Wallerstein, and David Williams.

My personal thanks to my husband Mike for his support and understanding.

My very sincere thanks go to each and every one of you for your support through your astronomical and financial contributions to the AAVSO.

11. Retrospective

On the occasion of my 20th Anniversary as Director of the Association, I would like to reflect back with you and review some of the remarkable changes that have taken place at the AAVSO over this time.

11.1. Headquarters Location

Twenty years ago AAVSO Headquarters consisted of a rented office at 187 Concord Avenue. This was a much smaller office on the street floor of an apartment building, which at that time seemed adequate for our needs. Today we are in our own, much larger building thanks to the generosity of Clint Ford.

11.2. Incoming observations

In 1973, 373 observers reported 121,089 observations from 19 countries and 43 states. In 1993, 576 observers from 37 countries and 40 states reported 305,691 observations. In 1973, we had boxes and boxes of computer cards, keypunch machines and sorters, and we were processing our data at Harvard College Observatory using their computers. Today, we have computer terminals at each staff person's desk, all networked to a main host with over 7.0 million observations on 2.4 gigabytes of hard disk, most of it easily accessible with a key stroke.

Twenty years ago we were handplotting directly from the monthly observer reports onto the light curves on 8.5 by 11-inch sheets. In terms of computerization, in 1967 the Director Emeritus, Margaret Mayall, started to computerize the observations on IBM cards, and in her 1973 Annual Report, she reported that "...we are now punching observations received in early 1972." Today, the observations are entered into the computer and processed by the end of the month following the one they are received at Headquarters, and the light curves are kept up to date.

11.3. Special requests for data

In the fiscal year 1973 we received 12 requests from astronomers for our data. This year we received 256. It should be noted that in 1973 we began to be actively involved in space research, as it was in that year that SS Cygni was observed with a sounding rocket to be an x-ray source, with AAVSO data indicating it was at maximum at the time of the observation. Some individuals who were graduate or post-doctorate students in 1973 are now prominent astronomers and many are still interested in variable stars and in the AAVSO. For example, Dr. Al Holm asked for data on SS Cygni in 1973; he continues to be interested in cataclysmic variables and he is our 1st Vice-President. Dr. George Wallerstein was another astronomer who asked for AAVSO data then and has continued to use our data over the years, and he is an AAVSO Council member. Stars like SS Cygni and U Geminorum were in the forefront of research in 1973 and they continue to be at the forefront of multiwavelength research today.

11.4. Publications

We had the following publications in 1973: *The Journal of the AAVSO* and the

AAVSO Circular (two new publications started in 1972), *AAVSO Reports*, *News Notes*, *Solar Bulletin*, and the *Bulletin*. The *Bulletin* in 1973 was made up of three parts: the first part contained the listings of predictions of maxima and minima dates of long period variables; part "A" contained schematic representations of minima, and part "B" contained schematic representations of the maxima of predicted dates. Most of the publications were copied using the Gestetner stencil machine—a messy procedure!

Now, twenty years later, we have many publications, including *The Journal of the AAVSO*, *Circular*, *Alert Notices*, *Newsletter*, *Photoelectric Photometry Newsletter*, *Solar Bulletin*, *Eclipsing Binary and RR Lyrae Star Ephemerides*, and *Bulletin*. The *Bulletin* is now only one publication, incorporating the A and B parts, giving the complete schematic record of the predicted dates. Instead of *Reports* we now publish *Monographs*. We have twice published, within these twenty years, the *AAVSO Variable Star Atlas*. We celebrated our 75th anniversary and published the proceedings of this anniversary meeting in the *Journal*. We had our first European Meeting in Brussels and published its proceedings, and we continue to develop new publications as well as make improvements to existing publications.

11.5. Headquarters Staff

In 1973 the headquarters office had three full-time employees: Margaret Mayall, the Director; Florence Bibber, Margaret's secretary; and I as Margaret's assistant. We also had several students to do data entry part-time. Today, we have 8 full-time staff people, including myself, and 2 part-time employees, and 2 volunteer assistants.

11.6. Expenses

In 1973 our expenses were \$43,388. In 1993 they are \$564,187, including mortgage payments (\$461,468 just for operations).

11.7. Grants

We had no grants from funding agencies in 1973. In 20 years we have received 28 grants from governmental agencies and private foundations for special projects that amount to over \$793,000, with the majority, \$725,000, awarded since 1983.

I would like to think that we have progressed and have taken important steps in the right direction over the past twenty years. At times it has been frustrating because we have not always been able to accomplish all of the goals that we have set—but then, perhaps our goals simply needed more time and resources to be achieved.

I would like to thank those who were present in the 1973 Council Meeting for electing me as their Director; for their faith and confidence, particularly that of Margaret Mayall, Dorrit Hoffleit, and Clint Ford, in electing a young, foreign-born (i.e., an alien then, US citizen today), inexperienced woman, who had just received her graduate degree and had just married a young man she had met at an AAVSO meeting at the Maria Mitchell Observatory.

I thank you for your support through all these years. Together we have brought the AAVSO to what it is today. It has been a very fulfilling and exciting twenty years and the future holds many more exciting things which I look forward to our achieving together.

Table 1. AAVSO Observer Totals 1992 – 1993 by Country

Country	No. Observers	No. Obs.	Country	No. Observers	No. Obs.
ARGENTINA	4	6967	IRELAND	1	10
AUSTRALIA	5	3451	ISRAEL	6	29950
AUSTRIA	3	493	ITALY	16	2924
BELGIUM	21	14180	JAPAN	6	1585
BOTSWANA	1	1011	LITHUANIA	1	228
BRAZIL	5	1385	MALAYSIA	1	47
CANADA	24	12516	MALTA	1	180
CHILE	1	322	NETHERLANDS	11	7847
CYPRUS	1	22	NEW ZEALAND	3	177
CZECH REPUBLIC*	13	2020	NORWAY	14	6332
DENMARK	7	1597	POLAND	7	5277
ENGLAND	8	10356	PORTUGAL	3	175
FINLAND	1	1943	ROMANIA	3	5625
FRANCE	32	15382	SOUTH AFRICA	16	23465
GERMANY	34	19657	SPAIN	32	5859
GREECE	2	2687	SWITZERLAND	4	252
HAITI	1	352	USA	219	101,011
HUNGARY	66	19858	ZIMBABWE	2	263
INDIA	1	285			
			GRAND TOTAL	576	305,691

*Some of these are from Slovakia.

Table 2. AAVSO Observer Totals 1992 – 1993 USA by State

State	No. Observers	No. Obs.	State	No. Observers	No. Obs.
ALABAMA (AL)	1	18	NEW HAMPSHIRE (NH)	4	1915
ARIZONA (AZ)	12	2458	NEW JERSEY (NJ)	8	6155
ARKANSAS (AR)	2	677	NEW MEXICO (NM)	2	16792
CALIFORNIA (CA)	16	2012	NEW YORK (NY)	14	11047
COLORADO (CO)	6	5286	NORTH CAROLINA (NC)	1	67
CONNECTICUT (CT)	9	2117	OHIO (OH)	6	679
FLORIDA (FL)	8	5254	OREGON (OR)	1	21
HAWAII (HI)	2	4094	PENNSYLVANIA (PA)	11	1117
IDAHO (ID)	2	426	PUERTO RICO (PR)	1	7
ILLINOIS (IL)	13	3938	RHODE ISLAND (RI)	1	15
INDIANA (IN)	7	7363	SOUTH CAROLINA (SC)	2	23
IOWA (IA)	4	313	SOUTH DAKOTA (SD)	1	338
KANSAS (KS)	4	947	TEXAS (TX)	13	2680
LOUISIANA (LA)	1	105	UTAH (UT)	2	191
MAINE (ME)	4	1567	VERMONT (VT)	2	158
MARYLAND (MD)	8	2866	VIRGINIA (VA)	7	3451
MASSACHUSETTS (MA)	10	8433	WASHINGTON (WA)	5	208
MICHIGAN (MI)	6	114	WEST VIRGINIA (WV)	2	240
MINNESOTA (MN)	4	1127	WISCONSIN (WI)	12	6490
MISSOURI (MO)	3	196			
NEVADA (NV)	2	106	TOTAL	219	101,011

Table 3. AAVSO Observers, 1992-1993

Code	Name, State or Country	No. Obs.	No. I.S.	Code	Name, State or Country	No. Obs.	No. I.S.
AAP	P. ABBOTT, CANADA	869	59	BHC	= C. BRUHN, DENMARK	1	
AMT	M. ADAMS, FL	1875	562	BMY	M. BRUNET, WI	19	1
AJO	* J. AFONSO, SPAIN	3		BOA	* A. BRUNO, FRANCE	31	2
AB	W. ALBRECHT, HI	4075	75	BJY	J. BRYDGES, AZ	79	
ALN	R. ALLISON, IA	50	18	BZB	Z. BRYLOWSKI, POLAND	21	
AAA	A. ALVES, BRAZIL	615		BSO	S. BURGESS, ME	3	
AMO	+ M. AMORETTI, ITALY	4		BFS	J. BUTLER, JR., CT	2	
AMS	* A. AMOSSE, FRANCE	60	3	CBA	* A. CABRERA RODRIGUEZ, SPAIN	44	3
AOD	£ O. ANDERSEN, NORWAY	4		CMQ	P. CAMILLERI, NEW ZEALAND	82	39
AEJ	E. ANDERSON, NY	96		CMP	R. CAMPBELL, FL	79	7
AJR	J. ANDRESS, AZ	20		CFN	* F. CAMPOS, SPAIN	95	
ARN	* L. ARNOLD, FRANCE	13	1	CEA	* B. CANDELA, FRANCE	179	
ARQ	* B. ARQUIER, FRANCE	6		CVJ	¢ J. CARVAJAL, SPAIN	17	3
AKT	T. ATKIN, HAITI	352		CAT	~ J. CASTANO, SPAIN	92	
BBJ	J. BAAB, CANADA	9		CDX	D. CHALOUX, MD	1	
BGF	# G. BAKOS, HUNGARY	3		CNT	D. CHANTILES, CA	428	4
BM	M. BALDWIN, IN	5804		CGF	G. CHAPLE, JR., MA	6	1
BGZ	G. BANIALIS, IL	2		CYA	A. CICHY, POLAND	1519	
BMQ	¢ M. BARANDA-GOMEZ, SPAIN	58		CLK	W. CLARK, MO	70	
BSF	S. BARNHART, OH	62	4	CWP	W. CLARKE, CA	137	
BSR	+ S. BARONI, ITALY	456		CNL	O. COLE ARNAL, CANADA	288	
BXR	^ R. BARRY, ISRAEL	145		COL	P. COLLINS, AZ	1512	1
BBA	B. BEAMAN, IL	132	12	CME	+ E. COLOMBO, ITALY	333	
BVD	D. BEARD, PA	11		CMG	& G. COMELLO, NETHERLANDS	1113	125
BJS	J. BEDIENT, VA	6		CNA	+ A. CONTI, ITALY	3	
BNY	R. BENGE, JR., TX	50	1	CK	S. COOK, AR	658	
BTY	T. BENNER, PA	619	138	COM	% T. COOPER, SOUTH AFRICA	400	4
BMX	+ M. BENUCCI, ITALY	2		CSJ	@ J. COUSSENS, BELGIUM	5	
BTM	# TAMAS BEREZC, HUNGARY	3		CWD	D. COWALL, MD	3	
BZT	# TIBOR BEREZC, HUNGARY	1		COW	H. COWARD, JR., TX	43	
BEB	R. BERG, IN	130		CR	T. CRAGG, AUSTRALIA	3252	894
BPM	* P. BERGE, FRANCE	33		CJH	J. CRAST, PA	25	
BVA	^ A. BERVALD, ISRAEL	736		CCS	C. CREIGH, NV	81	
BCX	+ R. BETTARINI, ITALY	2		CRR	R. CRUMRINE, NY	12	
BIC	* L. BICHON, FRANCE	866	2	CSM	M. CSUKAS, ROMANIA	1055	
BIS	\$ N. BISSANTZ, GERMANY	12		CKB	B. CUDNIK, AZ	142	1
BGB	B. BLAGG, TX	93		CUO	D. CUROTT, AL	18	
BQR	R. BLAKE, NJ	14		CDT	D. CURRIER, CA	92	1
BLD	% D. BLANE, SOUTH AFRICA	516	17	DAH	£ H. DAHLE, NORWAY	705	41
HUO	D. BLOOM, UT	4		DMI	\$ M. DAHM, GERMANY	560	
BAX	+ A. BOATTINI, ITALY	301	47	DSU	S. D'AMATO, SC	5	
BOC	+ R. BOCCADORO, ITALY	3		DAM	¢ A. DARRIBA, SPAIN	140	10
BOH	\$ D. BOEHME, GERMANY	164		DQM	@ M. DECLERCQ, BELGIUM	18	
BJV	J.-F. BOIVIN, CANADA	8		DBR	* B. DECOTTIGNIES, FRANCE	47	
BWO	\$ W. BOJACK, GERMANY	80		DJO	& J. DE JONG, NETHERLANDS	7	
BOE	J. BOREL, CA	1		DFR	F. DEMPSEY, CANADA	184	
BRJ	J. BORTLE, NY	6616	2048	DEK	@ K. DEQUICK, BELGIUM	176	4
BJB	J.-G. BOSCH, SWITZERLAND	105		DTE	@ T. DESLJPERE, BELGIUM	394	2
BMU	& R. BOUMA, NETHERLANDS	1241	44	DVI	% F. DE VILLIERS, SOUTH AFRICA	86	1
BPI	* P. BOURRET, FRANCE	83		DFJ	* J. DIAZ-FLORES, FRANCE	37	
BYL	R. BOYLE, PA	4		DJN	J. DICKINSON, PA	25	3
BMK	M. BRADBURY, IN	127	6	DPA	@ A. DIEPVENS, BELGIUM	5452	317
BDT	D. BRANCHETT, FL	732		DMN	@ D. DIERICK, BELGIUM	5	1
BZK	\$ R. BRANZK, GERMANY	454		DRG	R. DIETHELM, SWITZERLAND	25	
BMS	P. BREMSETH, NORWAY	15		DRD	R. DIETZ, CO	1	
BTB	T. BRETL, MN	7	1	DLA	A. DILL, KS	71	
BHA	\$ H. BRETSCHNEIDER, GERMANY	40		DIL	W. DILLON, TX	268	2
BSM	S. BRINCAT, MALTA	180	24	MDS	M. DIONISI, ITALY	121	20
BOS	@ E. BROENS, BELGIUM	707		DIO	M. DISKO, NJ	7	
BRT	T. BROWN, AZ	1		DPL	P. DOMBROWSKI, CT	535	87
BBT	R. BROWNING, NJ	209		GDB	# G. DOMENY, HUNGARY	17	

Table 3. AAVSO Observers, 1992-1993 (continued)

Code	Name, State or Country	No. Obs.	No. I.S.	Code	Name, State or Country	No. Obs.	No. I.S.
DZS	S. DOMINGUEZ, ARGENTINA	6739		GMM	M. GUMLER, TX	6	
DZM	* M. DONZEL, FRANCE	68	2	GUN	* J. GUNTHER, FRANCE	1251	4
DRN	% N. DREYER, SOUTH AFRICA	5		GMF	M. GUTRIDGE, IL	16	
DKI	# I. DRUCSKO, HUNGARY	33		HCS	# C. HADHAZI, HUNGARY	516	
DUS	* R. DUBOIS, FRANCE	8		HTY	T. HAGER, CT	368	18
DAB	A. DUKES, JR., SC	18	1	HJT	# A. HAJDU, HUNGARY	73	
DMO	* M. DUMONT, FRANCE	472		HKB	B. HAKES, IL	130	
DKD	D. DVORAKOVA, CZECH REPUBLIC	1		HK	E. HALBACH, CO	3008	18
DGP	G. DYCK, MA	8203	5061	HTT	P. HALLETT, CANADA	238	
EKG	G. EKLUND, OR	21		HMG	# G. HALMI, HUNGARY	9	
EL	J. ELLERBE, SPAIN	21		HMR	R. HAM, CO	1403	13
EM	G. EMERSON, CO	8	1	HAN	J. HANNON, CT	45	
EPE	\$ P. ENSKONATUS, GERMANY	66		HPR	C. HARPER, NH	5	
EWK	K. EWING, FL	7		HAV	R. HARVAN, MD	96	16
FMA	+ M. FADDA, ITALY	303		HBL	\$ B. HASSFORTH, GERMANY	176	
FEO	# E. FARKAS, HUNGARY	36		HAI	A. HASTINGS, MA	33	
FCA	C. FAUSEL, IN	4		HAB	R. HAYS, JR., IL	1017	
FBE	\$ B. FEHER, GERMANY	16		HZL	L. HAZEL, NY	269	105
FDN	\$ D. FEHER, GERMANY	16		HLS	£ L. HEEN, NORWAY	79	
FJH	& H. FEIJTH, NETHERLANDS	4475	939	HEF	M. HEIFNER, CO	845	181
FKJ	# J. FEKETE, HUNGARY	1348		HCE	C. HEIL, MA	10	
FET	T. FETTERMAN, NJ	5		HEL	£ K. HELBAK, NORWAY	14	
FRF	# R. FIDRICH, HUNGARY	1136	220	HEN	C. HENSHAW, BOTSWANA	1011	
FSJ	* J.-L. FIS, FRANCE	467	12	HJN	% J. HERS, SOUTH AFRICA	594	129
FTE	T. FISHER, NY	1		HES	C. HESSELTINE, WI	47	1
FEM	E. FLYNN, MO	111	2	HVM	# M. HEVESI, HUNGARY	1	
FSE	+ S. FOGLIA, ITALY	977		HEV	# Z. HEVESI, HUNGARY	138	1
FFC	# F. FOLDESI, HUNGARY	184	6	HJR	# Z. HEVESI, JR., HUNGARY	9	
FGA	% G. FOURIE, SOUTH AFRICA	2		HE	L. HIETT, VA	2653	
FBM	B. FOX, OH	76		HRI	R. HILL, AZ	237	2
FBN	% B. FRASER, SOUTH AFRICA	68		HZR	\$ R. HINZPETER, GERMANY	493	
FML	& M. FRIDLUND, NETHERLANDS	38		HIR	Y. HIRASAWA, JAPAN	868	43
FAA	+ A. FROSINA, ITALY	40		HWD	W. HODGSON, ENGLAND	39	
FMG	G. FUGMAN, IA	114	8	HFO	\$ G. HOFFER, GERMANY	173	
GMB	M. GABLE, OH	476		HLT	G. HOLTER, WA	11	
GBZ	^ O. GABZO, ISRAEL	20420	117	HJO	& J. HOLTROP, NETHERLANDS	679	
GEC	E. GALE, IA	118		HZJ	J. HOLTZ, PA	322	
GDH	¢ D. GALLEGO, SPAIN	11		HOK	K. HORNOCH, CZECH REPUBLIC	2	
GDO	¢ D. GARCIA, SPAIN	4	1	HFE	# F. HORVATH, HUNGARY	14	
GPA	¢ F. GARCIA, SPAIN	193	5	HUT	T. HUNTER, AZ	29	
GJG	¢ J. GARCIA, SPAIN	7		HUR	G. HURST, ENGLAND	1	
GJO	¢ J. GARRIDO, SPAIN	12		IPA	P. INGRASSIA, ARGENTINA	80	
GJN	\$ J. GENSLER, GERMANY	254		IFJ	F. IVES, NEW ZEALAND	82	
GCP	\$ C. GERBER, GERMANY	2840		JCA	* C. JACINTO, PORTUGAL	2	
GKT	# K. GERGELY, HUNGARY	10		JTP	* P. JACQUET, FRANCE	233	2
GVN	V. GIOVANNONE, NY	214		JQL	* L. JACQUIER, FRANCE	1	
GGT	G. GLENN, KS	104		JJA	J. JAHN, GERMANY	10	
GHA	\$ H. GOLDBAHN, GERMANY	779		JJS	J. JANATA, CZECH REPUBLIC	3	
GEA	E. GOMEZ, CA	23		JMP	M. JANES, AZ	1	
GPB	¢ P. GOMEZ, SPAIN	1		JAJ	@ J. JANSSENS, BELGIUM	91	
GZN	* A. GONZALES, SPAIN	4		JKK	£ K. JENSEN, NORWAY	12	
GOP	P. GOODWIN, LA	105	10	JLT	L. JENSEN, DENMARK	870	239
GLM	L. GORSKI, IL	1		JCH	& C. JOHANNINK, NETHERLANDS	19	
GFG	F. GRAHAM, OH	2	1	JOG	G. JOHNSON, MD	164	1
GRL	£ B. GRANSLO, NORWAY	4320	36	JR	R. JOHNSON, MD	12	
GRI	J. GRIESE, III, CT	651	447	JON	@ K. JONCKHEERE, BELGIUM	140	1
GOC	R. GROCHOWSKI, POLAND	480		JRW	% R. JONES, SOUTH AFRICA	2737	
GML	M. GRUNANGER, AUSTRIA	11		JJL	% J. JOOSTE, SOUTH AFRICA	34	
GCT	= C. GRUNNET, DENMARK	243		JPE	# P. JUHAROS, HUNGARY	32	
GUB	@ G. GUBBELS, BELGIUM	420		KDA	D. KAISER, IN	34	
GHD	H. GUIDRY, NC	67		KB	W. KAMINSKI, SD	338	9

Table 3. AAVSO Observers, 1992-1993 (continued)

Code	Name, State or Country	No. Obs.	No. I.S.	Code	Name, State or Country	No. Obs.	No. I.S.
KEI	E. KATO, AUSTRALIA	128	2	LKA	K. LUEDEKE, NM	51	
KTL	L. KEITH, WI	299		LRE	R. LUNSFORD, CA	13	
KDK	D. KELLINGTON, CANADA	6		LBB	B. LUX, PA	4	
KKC	K. KEMP, MI	12		MDW	W. MACDONALD, II, CANADA	129	2
KAK	# A. KERESZTURI, HUNGARY	232	1	MDH	H. MADDOCKS, VA	39	
KSZ	# S. KESZTHELY, HUNGARY	2		MLI	L. MAISLER, NY	605	1
KRB	R. KING, MN	450	109	MKN	* N. MAKIGUCHI, JAPAN	2	
KBR	B. KIRSHNER, CA	36		MJZ	* J. MANZORRO, SPAIN	721	1
KIL	# L. KISS, HUNGARY	2259	11	MCO	M. MARCARIO, TX	5	
KON	= O. KLINTING, DENMARK	1		MTB	# T. MARONICS, HUNGARY	29	
KPE	\$ P. KLIX, GERMANY	63		MJH	* J. MARTINS, SPAIN	11	
KZA	* A. KLOTZ, FRANCE	3	1	MNX	* N. MARTINS, SPAIN	8	
KGT	G. KNIGHT, ME	117		MRX	\$ H. MARX, GERMANY	1277	87
KSP	S. KNIGHT, ME	96	9	MGA	G. MASON, NY	7	
KS	J. KNOWLES, NH	87		MAQ	# A. MATIS, HUNGARY	10	
KDF	D. KOCYLA, CT	30		MPR	\$ P. MAURER, GERMANY	49	
KKF	K. KOEHLER, AZ	155		MGE	G. MAVROFRIDIS, GREECE	2627	
KLG	G. KOHL, AZ	46		MAZ	M. MAZUREK, CA	153	
KHL	M. KOHL, SWITZERLAND	78		MGU	T. MCCAGUE, IL	54	
KKN	# I. KOKAI, HUNGARY	2		MDV	D. MCCOLLUM, VA	9	
KRS	R. KOLMAN, IL	1015	118	MCV	P. MCCROHAN, AUSTRALIA	28	
KMA	M. KOMOROUS, CANADA	1128		MDP	P. MCDONALD, CANADA	18	
KOS	A. KOSA-KISS, ROMANIA	1983	2	MJP	P. MCJUNKINS, TX	5	
KKO	K. KOSS, CZECH REPUBLIC	25	1	MKJ	J. MCKENNA, NJ	1640	41
KAV	S. KOUSHIAPPAS, CYPRUS	22		MLX	S. MCLEAN, MA	5	
KVI	# I. KOVACS, HUNGARY	151	7	MJB	J. MCMAATH, AR	19	1
KZZ	# Z. KRANICZ, HUNGARY	27		MRH	R. MCNAUGHT, AUSTRALIA	1	
KWO	\$ W. KRIEBEL, GERMANY	162		MIB	£ I. MEDIAAS, NORWAY	23	
KRN	% N. KRIEK, SOUTH AFRICA	137		MED	K. MEDWAY, ENGLAND	2233	2
KIS	\$ G. KRISCH, GERMANY	2190		MDI	I. MIDDLEMIST, ENGLAND	529	
KRK	K. KRISCIUNAS, HI	19		MOK	£ O. MIDTSKOGEN, NORWAY	1096	404
KJI	J. KRITICKA, CZECH REPUBLIC	466		MRU	R. MILLER, TX	227	2
KRU	J. KRUTA, CZECH REPUBLIC	56		MSB	S. MISTERO, ITALY	2	
KBP	P. KUBICEK, CZECH REPUBLIC	12		MZS	# A. MIZSER, HUNGARY	972	90
KUC	* S. KUCHTO, FRANCE	453		MCE	E. MOCHIZUKI, JAPAN	167	
KSA	A. KUCINSKAS, LITHUANIA	228		MMI	\$ M. MOELLER, GERMANY	5318	
KPG	& G. KUIPERS, NETHERLANDS	32		MOD	D. MOHRBACHER, OH	34	
KUO	C.-S. KUO, MA	3		MOL	J. MOLNAR, VA	736	
KBO	R. KUPLIN, PA	25		MLF	% L. MONARD, SOUTH AFRICA	949	
KGR	# G. KUTROVACZ, HUNGARY	14		MJ	A. MONTAGUE, MI	50	
LMF	M. LARA, BRAZIL	190		MF	F. MONTAGUE, MA	71	2
LSK	S. LASKOWSKI, WI	63		MOI	* E. MORILLON, FRANCE	20	
LVA	£ A. LAUVSTAD, NORWAY	45		MOW	W. MORRISON, CANADA	4518	179
LVH	@ H. LAVERGE, BELGIUM	4		MKH	S. MUKHERJEE, INDIA	285	
LZT	T. LAZUKA, IL	132		NAG	# G. NAGY, HUNGARY	345	
LEB	* R. LEBERT, FRANCE	274	1	NZO	# Z. NAGY, HUNGARY	87	
LNZ	G. LENZ, CT	56	1	NMA	# A. NAGY-MELIKUTI, HUNGARY	77	
LGE	* G. LETELLIER, FRANCE	15		NMK	M. NAKATANI, JAPAN	6	
LEV	A. LEVEQUE, CA	77		NMS	M. NALL, MD	838	
LIW	W. LILLER, CHILE	322	136	NTL	M. NATALE, NJ	2	2
LKN	% K. LOBB, SOUTH AFRICA	3		NRH	R. NELSON, CANADA	50	
LOB	* J. LOBO-RODRIGUEZ, SPAIN	10		NMN	* J. NEUMAN, GERMANY	2	
LWT	T. LOHVINENKO, CANADA	88		NJO	\$ J. NEUMANN, GERMANY	17	
LCS	S. LOMONACO CARVALHO, BRAZIL	99		NFC	F. NICOLAU, ARGENTINA	139	
LGN	G. LOPRIORE, MA	16		NBY	J. NORDBY, MN	305	44
LRZ	# M. LORINCZ, HUNGARY	17		NTS	T. NORTON, WV	21	
LEJ	E. LOS, NH	21		NVK	M. NOVAK, TX	366	60
LVT	J. LOVETT, NH	1802	1	NOG	G. NOWAK, VT	61	
LTZ	£ T. LOZANO, SPAIN	1		OBT	T. O'BRIEN, NY	1	
LTB	T. LUBBERS, MN	365		OCN	S. O'CONNOR, CANADA	194	
LBG	G. LUBCKE, WI	1504	122	OES	D. OESPER, IA	31	1

Table 3. AAVSO Observers, 1992-1993 (continued)

Code	Name, State or Country	No. Obs.	No. I.S.	Code	Name, State or Country	No. Obs.	No. I.S.
OER	^ E. OFEK, ISRAEL	6091	2	STC	G. SANTACANA, PR	7	
OJO	= J. OLESEN, DENMARK	127		SGI	M. SANTOS, PORTUGAL	126	
ORB	R. OLSEN, VA	2		SPQ	# C. SAPI, HUNGARY	629	12
ONJ	J. O'NEILL, IRELAND	10	2	SKI	# K. SARNECZKY, HUNGARY	63	
OV	E. ORAVEC, NY	3085		SGE	G. SARTY, CANADA	526	
ORW	W. ORTEL, RI	15		SGN	G. SCHEMBRI, NY	1	
OJR	¢ J. OSORIO RIPERO, SPAIN	3897	279	SPK	P. SCHMEER, GERMANY	773	9
OCR	@C. OTTEN, BELGIUM	1		SMF	F. SCHMIDT, NY	17	
ONY	# N. OTTO, HUNGARY	53		SAQ	& A. SCHOLTEN, NETHERLANDS	54	
OB	% D. OVERBEEK, SOUTH AFRICA	16617	81	SLZ	G.-L. SCHOTT, GERMANY	67	
PLA	A. PADILLA FILHO, BRAZIL	449		SSE	S. SCHUE, NY	9	
PCA	# C. PAP, HUNGARY	91	9	SWX	T. SCHWARTZ, MI	39	
PCC	R. PAPINI, ITALY	68		SCZ	* E. SCHWEITZER, FRANCE	926	7
PPS	# S. PAPP, HUNGARY	1694	123	SCX	E. SCIARONI, MO	15	
PLI	* L. PARMEGGIANI, FRANCE	13		SCE	C. SCOVIL, CT	339	134
PAK	# A. PATAK, HUNGARY	98		SNP	P. SERNAS, IL	10	
PN	A. PEARLMUTTER, MA	54		SSL	M. SESLAR, FL	8	
PEI	= E. PEDERSEN, DENMARK	154	6	SHS	S. SHARPE, CANADA	1901	30
PEG	* C. PEGUET, FRANCE	5		SSA	A. SHARPLESS, WA	189	
PMR	M. PERALA, FINLAND	1943	180	SHQ	^ O. SHEMMER, ISRAEL	1667	4
PAE	A. PEREIRA, PORTUGAL	47		SHW	W. SHERMAN, IN	117	
PJD	# J. PETERFALVI, HUNGARY	17		SIH	* M. SILHOL, CZECH REPUBLIC	629	
PKI	O. PIECHOWSKI, MI	1		SNE	N. SIMMONS, UT	187	47
PTZ	\$ J. PIETZ, GERMANY	1061	29	SNR	£ R. SKARTLIEN, NORWAY	2	
PFU	* F. PINEAU, FRANCE	44	1	SOF	£ O. SKJAEERAASEN, NORWAY	5	
PBE	@B. PIOLON, BELGIUM	138	1	SUO	£ O. SMEDSTUEN, NORWAY	1	
PLR	R. POOLE, PA	34		SJX	% J. SMIT, SOUTH AFRICA	1114	
PVK	K. POSVIK, CZECH REPUBLIC	2		SDU	D. SMITH, WI	27	8
PWR	R. POWASKI, OH	29		SHA	H. SMITH, MI	3	
POX	M. POXON, ENGLAND	2893	97	SMQ	M. SMITH, AZ	187	
PYG	G. POYNER, ENGLAND	4311	2101	SX	L. SNYDER, NV	25	
PPR	# P. PRESITS, HUNGARY	23		SSZ	# Z. SOOS, HUNGARY	57	
PJI	J. PRYAL, WA	2		SOH	= H. SORENSEN, DENMARK	201	
PUJ	¢ F. PUJOL, SPAIN	213	20	SJZ	J. SPEIL, POLAND	1471	
PZU	# Z. PUSZTAI, HUNGARY	2		SPO	£ J. SPONGSVEEN, NORWAY	11	
QPF	P. QUINN, WI	45	3	SC	C. SPRATT, CANADA	5	
RKE	\$ K. RAETZ, GERMANY	566		SYM	M. SPURNEY, CZECH REPUBLIC	1	
RKM	\$ M. RAETZ, GERMANY	630		SSP	P. STAMUS, CO	21	
RPY	* P. RAPAUVY, HUNGARY	1		STR	R. STANTON, CA	73	55
RRB	R. RAPHAEL, ME	1351	321	SVD	V. STEBLINA, WA	5	
REP	P. REINHARD, AUSTRIA	33		SKS	T. STECKNER, CANADA	3	
RGZ	¢ G. RIVAS, SPAIN	7		STI	P. STEFFEY, FL	1521	99
RPR	P. ROBBINS, KS	686	98	SGP	P. STEGMANN, NJ	2	
RNB	% N. ROBINSON, SOUTH AFRICA	201		SPU	P. STEPAN, CZECH REPUBLIC	270	31
RZD	¢ D. RODRIGUEZ, SPAIN	15		SET	C. STEPHAN, FL	1028	56
RMU	¢ M. RODRIGUEZ MARCO, SPAIN	3		SWT	R. STEWART, NJ	4276	1570
RJA	* J.-P. ROHART, FRANCE	597		STQ	N. STOIKIDIS, GREECE	60	
RGB	G. ROSENBERG, AZ	49		SUK	M. STUKA, CA	2	
ROG	G. ROSS, MI	9	3	SUX	¢ M. SUAREZ, SPAIN	126	
RGL	^ G. ROTEM, ISRAEL	891	59	SUS	D. SUSSMANN, GERMANY	175	
RWL	D. ROWLEY, VA	6		SVL	L. SVENNUNGEN, CT	91	
RR	R. ROYER, CA	585	41	SVN	P. SVENTEK, TX	468	1
RJV	¢ J. RUIZ, SPAIN	28		SWV	D. SWANN, TX	409	
RPH	H. RUMBALL-PETRE, CA	18		SSR	R. SWEETSIR, FL	4	
RIS	# I. RUZSINKA, HUNGARY	2		SSW	S. SWIERCZYNSKI, POLAND	1407	
RZM	M. RZEPKA, POLAND	131		SSI	# G. SZABO, HUNGARY	28	
SJZ	A. SAJTZ, ROMANIA	2587		SIZ	# RITA SZABO, HUNGARY	20	
SSU	S. SAKUMA, JAPAN	509	52	SBT	# ROBERT SZABO, HUNGARY	1840	134
SAH	G. SAMOLYK, WI	3058	41	SAO	# A. SZAUER, HUNGARY	142	
SFA	¢ FAUSTINO SANCHEZ, SPAIN	6		SNO	# L. SZENTASKO, HUNGARY	5508	3060
SEF	¢ FLORENTINO SANCHEZ, SPAIN	30		SZK	# G. SZITKAY, HUNGARY	5	

Table 3. AAVSO Observers, 1992-1993 (continued)

Code	Name, State or Country	No. Obs.	No. I.S.	Code	Name, State or Country	No. Obs.	No. I.S.
SUZ	# P. SZUTOR, HUNGARY	518	7	VNZ	# Z. VICIAN, HUNGARY	33	11
THK	# H. TALOS, HUNGARY	4		VJF	J.-F. VIENS, CANADA	177	7
TAI	# M. TARNAI, HUNGARY	7		VIN	J. VINCENT, ZIMBABWE	91	
TDB	D. TAYLOR, CANADA	1122	220	VII	# I. VINCZE, HUNGARY	50	
TLA	M. TAYLOR, ENGLAND	1		VHC	H. VITAL, BRAZIL	32	
TJM	‡ M. TEJERA, SPAIN	5		VFK	\$ F. VOHLA, GERMANY	979	
TBA	B. TEKATCH, CANADA	83		VJS	S. VOJTECH, CZECH REPUBLIC	503	
TJV	* J. TEMPRANO, SPAIN	74		VOL	W. VOLLMANN, AUSTRIA	449	
TPS	# I. TEPLICZKY, HUNGARY	326		WLC	L. WADLE, TX	7	
TBD	D. THIBEAULT, CANADA	8		WKP	P. WALKER, VT	97	13
TAX	A. THOMAS, GERMANY	20		WP	G. WALLERSTEIN, WA	1	
THR	R. THOMPSON, CANADA	892		WND	* D. WALLIAN, FRANCE	9	
THU	* B. THOUET, FRANCE	700		WSM	% S. WALSH, ZIMBABWE	172	6
TIA	# A. TIMAR, HUNGARY	79		WSI	R. WASATONIC, MD	84	
TMB	+ M. TOMBELLI, ITALY	305	28	WER	R. WEBER, KS	86	
TST	S. TOOTHMAN, IL	13		WEI	D. WEIER, WI	958	293
TRT	# T. TORDAI, HUNGARY	182		WJU	J. WEIER, WI	34	10
TRA	‡ A. TORRES, SPAIN	2		WC	R. WEND, IL	1053	5
TTE	# E. TOTH, HUNGARY	28		WET	T. WESELEK, POLAND	248	
TTK	# K. TOTH, HUNGARY	334		WEF	F. WET, PA	1668	
TTH	# T. TOTH, HUNGARY	80	1	WEJ	J. WEST, ENGLAND	349	4
TFN	F. TRAYNOR, AUSTRALIA	42		WYT	T. WEYENBERG, WI	192	
TRF	C. TREFZGER, SWITZERLAND	44	7	WTK	* K. WIESZT, HUNGARY	60	
TDM	D. TROIANI, IL	363	29	WI	D. WILLIAMS, IN	1147	22
TSJ	S. TSUIJ, JAPAN	33		WPX	P. WILLIAMS, NEW ZEALAND	13	1
TYS	R. TYSON, NY	94		WJY	@ J. WILMS, BELGIUM	25	2
UND	G. UNDERHAY, CA	32		WLP	@ P. WILS, BELGIUM	93	
UCA	C. UNREIN, ID	413		WDN	D. WILSON, TX	733	131
VFR	F. VACLIC, CZECH REPUBLIC	50		WSN	T. WILSON, WV	219	86
VBR	H. VAN BEMMEL, CANADA	72	2	WKM	M. WISKIRKEN, ID	13	
VBP	% P. VAN BLOMMESTEIN, S. AFRICA	2		WUL	\$ U. WITT, GERMANY	172	
VCP	@ P. VAN CAUTEREN, BELGIUM	1147	366	WNG	L. WONG, MALAYSIA	47	
VDH	& H. VAN DEN HIL, NETHERLANDS	16		WJM	J. WOOD, CA	197	
VBH	@ H. VANDENBRUAENE, BELGIUM	33		WRO	R. WRIGHT, CA	145	
VDL	@ J. VAN DER LOOY, BELGIUM	662		YRK	D. YORK, NM	16741	8913
VDJ	& J. VAN DIJK, NETHERLANDS	173	4	YON	R. YOUNG, PA	43	1
VHD	@ D. VAN HESSCHE, BELGIUM	227		ZFE	# F. ZAGYI, HUNGARY	48	
VNL	@ F. VAN LOO, BELGIUM	544	33	ZAG	# G. ZAJACZ, HUNGARY	29	
VMT	@ T. VANMUNSTER, BELGIUM	3898	1652	ZAM	+ M. ZANOTTA, ITALY	4	
VGA	# B. VARGA, HUNGARY	4		ZIN	S. ZINN, PA	5	
VZS	# Z. VARGA, HUNGARY	16		ZEB	\$ E. ZISCHE, GERMANY	3	
VED	* P. VEDRENNE, FRANCE	5151		ZRE	R. ZISSELL, MA	32	8
VET	* M. VERDENET, FRANCE	3248	1609	ZT	R. ZIT, WI	244	46
VIA	* J. VIALLE, FRANCE	69					

Symbols indicate membership in or observations received by AAVSO through

- * Association Française des Observateurs d'Étoiles Variables (AFOEV).
- & Nederlandse Vereniging Voor Weer-en Sterrenkunde, Werkgroep Veranderlijke Sterren (Netherlands).
- # Magyar Csillagászati Egyesület, Változócsillagok (Hungary).
- \$ Bundesdeutsche Arbeitsgemeinschaft für Veränderliche Sterne e.V. (BAV).
- @ Vereniging Voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium).
- % Astronomical Society of Southern Africa, Variable Star Section.
- ‡ Agrupacion Astronómica de Madrid M1 (Spain).
- ^ Israeli Astronomical Association, Variable Star Section.
- + Unione Astrofili Italiani.
- = Astronomisk Selskab (Scandinavia).
- ~ Agrupacion Astronómica Albireo de Sevilla.
- £ Norsk Astronomisk Selskab, Variable Stjernegruppen (Norway).

Table 4. Individuals Requesting AAVSO Data During Fiscal Year 1992-1993.

<i>Name</i>	<i>Affiliation</i>
W. Andersen-Pugh	Luther College, IA
J. Andujar	Seville, Spain
T. Army	University of Massachusetts, MA
S. Austin	Arizona State University, AZ
D. Bailey	Waverly, VA
D. Barthes (3)	Université de Montpellier, France
R. Benjamin	University of Texas, TX
J. Bevelock (5)	Kearfott Guidance & Navigation, NJ
H. Bond	Space Telescope Science Institute, MD
M. Bradbury	Indianapolis, IN
D. Bruning	<i>Astronomy</i> , WI
C. Byars	<i>Houston Chronicle</i> , TX
W. Busche	Westerville, OH
J. Carlson	Harwich, MA
G. Chaple	Townsend, MA
G. Clayton (8)	University of Colorado, CO
F. Crifo	Observatoire de Meudon, France
K. Crowell	Berkeley, CA
D. Dane	Denton, TX
M. de Groot	Armagh Observatory, N. Ireland
R. de Stefano	Massachusetts Institute of Technology, MA
J. Drilling (2)	Louisiana State University, LA
S. Duck	Birmingham University, England
H. Duerbeck	Westfälische Wilhelms-Universität, Astronomisches Institut, Germany
S. Engelbrektson	Pleasantville, NY
D. Evans	Maryland
R. Friedrich	Cupertino, CA
B. Fuqua	Douglasville, GA
S. Gabi	"Hands-On-Universe," Berkeley, CA
P. Garnavich	Dominion Astrophysical Observatory, Canada
E. Gerard	Observatoire de Paris, France
G. Gliha	Greenbelt, MD
J. Good	California Institute of Technology, CA
E. Gotthelf	NASA Goddard Space Flight Center, MD
B. Granger	Laurel, MD
E. Guinan (2)	Villanova University, PA
W. Hack	Space Telescope Science Institute, MD
T. Hager	New Milford, Connecticut
E. Harlaftis	ING Telescopes, La Palma
J. Haug	Grand Forks, ND
P. Hemenway	University of Texas, TX
A. Holm	Space Telescope Science Institute, MD
K. Horne	Space Telescope Science Institute, MD
S. Howell (3)	Planetary Science Institute, AZ
J. Hron	Institut für Astronomie, Austria
D. Hünemörder	NASA Headquarters, Washington, DC
I. Ivans	University of Toronto, Canada
R. Ivison	University of Toronto, Canada
T. Jackson	Louisville, OH

Table 4. Individuals Requesting AAVSO Data During Fiscal Year 1992-1993 (continued).

<i>Name</i>	<i>Affiliation</i>
C. Jaschek	Observatoire de Strasbourg, France
G. Kandra	CBS, NY
M. Karovska (3)	Harvard-Smithsonian Center for Astrophysics, MA
M. Kennedy	Holly, MN
I. Klyus	Odessa, Ukraine
N. Kobayashi	Kyoto University, Japan
K. Krisciunas	Joint Astronomy Center, HI
P. Kroll	Sonneberg Observatory, Germany
E. Lamb	Natick, MA
J. Lee	Bristol, CT
E. Leibowitz	Tel Aviv University, Israel
A. Le Squeren (2)	Observatoire de Paris, France
D. Light	Princeton, NJ
I. Little-Marenin (2)	Wellesley College, MA
M. Livio	Space Telescope Science Institute, MD
C. Lloyd	Rutherford Appleton Laboratory, England
G. Lubow	NASA Goddard Space Flight Center, MD
D. Lubowich	American Institute of Physics, NY
A. MacRobert (3)	<i>Sky & Telescope</i> , MA
C. Mansperger (2)	NASA Goddard Space Flight Center, MD
L. Marschall	Gettysburg College, PA
B. Marsden (27)	Harvard-Smithsonian Center for Astrophysics, MA
E. Martin	Redondo Beach, CA
J. Maske	Birmingham, AL
G. Mason	Glens Falls, NY
T. Matheson	University of California, CA
M. Mattei	Massachusetts Institute of Technology Lincoln Laboratory, MA
C. Mauche (6)	Lawrence Livermore National Laboratory, CA
J. Mayer	New Hudson, MI
T. Mazeh	Center for Astrophysics, MA
M.-O. Mennessier (4)	Université de Montpellier, France
C. Menke	Selah School District, WA
J. Mikolajewska	Copernicus Astronomical Center, Poland
R. Mutel	University of Iowa, IA
S. Nathan	Maria Mitchell Observatory, MA
J. Nousek	Penn State University, PA
H. Nussbaumer	ETH Zentrum, Switzerland
K. Nyren	Norton, MA
S. O'Meara	<i>Sky & Telescope</i> , MA
K. Opderbecke	Springfield, OH
B.D. Oppenheimer	Framingham, MA
M. Orio	University of Padova, Italy
E. Ostuno	Cheshire, CT
H. Owen	Borger, TX
N. Patel	University of Massachusetts, MA
R. Patterer	Center for EUV Astrophysics, CA
J. Patterson (3)	Columbia University, NY
K. Pendlebury	Washington, DC
C. Pennypacker	University of California, Berkeley, CA

Table 4. Individuals Requesting AAVSO Data During Fiscal Year 1992–1993 (continued).

<i>Name</i>	<i>Affiliation</i>
J. Percy (2)	University of Toronto, Canada
A. Pogosyants	Sternberg Astronomical Institute, Russia
A. Quirrenbach	U. S. Naval Observatory, DC
R. Ralph	Omaha, NE
M. Richmond (2)	Princeton University, NJ
C. Robinson (4)	Pennsylvania State University, PA
A. Rogel	Amherst College, MA
S. Rosen	University of Leicester, England
K. Ruminski	Torun Radio Astronomy Observatory, Poland
G. Ruth	Indiana University, S.E., IN
P. Rybski	University of Wisconsin at Whitewater, WI
B. Sargent	Savannah, GA
J. Sargent	Savannah, GA
H. Sato	University of Tokyo, Japan
W. Scharlach	Tucson, AZ
A. Shannonlass	Adelphi, MD
S. Shore	NASA Goddard Space Flight Center, MD
A. Silber (5)	Harvard-Smithsonian Center for Astrophysics, MA
T. Simacek	Kokomo, IN
S. Simmerman	Pitman, NJ
E. Sion (19)	Villanova University, PA
T. Snijders	Astronomisches Institut Tuebingen, Germany
M. Soukup	Los Alamos National Laboratory, NM
N. Sperling	Chabot Observatory, CA
D. Spiegel	Great Neck, NY
Sumner Starrfield	Arizona State University, AZ
Sara Starrfield	Phoenix, AZ
P. Szkody (7)	University of Washington, WA
J. Tamanini	Concord Academy, MA
R. Teske	University of Michigan, MI
C. Townes (3)	University of California, CA
V. Trimble	University of Maryland, MD
W. Truett	West Brattleboro, VT
A. Tyrrell	Lawrence Academy, MA
R. Viotti	Istituto di Astrofisica-Spaziale, Italy
G. Wallerstein	University of Washington, WA
W. Warren (3)	NASA Goddard Space Flight Center, MD
J. Welch	Hat Creek Observatory, CA
C. Wenning	Normal, IL
B. Whitney (2)	Harvard-Smithsonian Center for Astrophysics, MA
D. Wildasin	Strawberry Mansion High School, PA
L. Willson	Iowa State University, IA
A. Woodworth	Dominion Astrophysical Observatory, Canada
E. Worle	<i>Omni</i>
S. Yorke	Denison University, OH
K. Young	Pasadena, CA

Note: A number in parentheses after the name indicates multiple requests.