

## ANNUAL REPORT OF THE DIRECTOR FOR THE FISCAL YEAR 1990 - 1991

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It is a pleasure and a privilege for me to present my 18th Annual Report, for the fiscal year 1990-1991.

### 1. Data Management and Data Processing

#### 1.1. Computer Facilities

Thanks to two grants from NASA, we have upgraded our computer facilities by:

- a. adding 600 megabytes of hard disk in order to provide adequate on-line data storage space;
- b. providing a terminal or stand-alone system for each staff person; and
- c. networking all of these terminals and systems, thus enabling complete access to files and computer programs in the main computer.

In addition to the above computer hardware upgrades, we transported to the Headquarters computer system the 4.5 million computer-readable observations from 1963 to date that were stored on magnetic tapes at the Harvard-Smithsonian Center for Astrophysics (CfA). We continue to store a copy of our current data files on magnetic tapes at CfA for security purposes.

#### 1.2. Data Archive Management

We have developed computer programs to merge monthly observations into the archives easily, to archive the data with security, and to manage and access the 4.5 million observations on 3600 stars efficiently and easily.

Every two weeks we back up all computer files on cassette tapes and make copies so that we can store them at different locations.

#### 1.3. Computer Plotting

It is interesting to note briefly the history of our data plotting and data preparation for publishing. Until the 1950's, all data plotting was being done by hand using paper and pencil, graph paper, and calculating machines. During the early part of Margaret Mayall's Directorship of the AAVSO, Rolodex card strips became extremely handy in compiling the data for publication.

In 1967, Margaret made the excellent decision to computerize by keying-in on computer cards the observations going back to 1960. Thus started the computer age for the AAVSO.

In the 1970's, AAVSO Headquarters was filled with computer keypunch machines, sorters, and computer cards. All our processing of data was being done at the Harvard-Smithsonian Center for Astrophysics, thanks to a grant from the Smithsonian Astrophysical Observatory for computer time.

In 1981, through a grant from Research Corporation, we purchased our first micro-computers. They had 528 kbytes of memory, which, for that time, was marvelous for a micro-computer. We had the following dreams at that time regarding the computerization of our data:

- a. to be able to process all our data at Headquarters, i.e., to be completely independent when it came to data processing;
- b. to generate by computer the light curves on each star rather than hand-plot them;
- c. to provide a computer terminal for each staff person at Headquarters and network the terminals so that each person could access the data or any other file easily.

Today each of these dreams is a reality.

It is interesting to note that until two years ago we were still hand-plotting data because of the limitations of our computers. Now plotting is completely computerized, thanks to the efforts of Grant Foster, our computer specialist.

As a small token of appreciation to our members and observers, this year we offered during the holiday season the choice of two light curves to each person. So far we have received 204 requests.

#### 1.4. Data Processing

I am happy to report that we are up-to-date in the computerization and processing of our incoming observations. Increasing numbers of observations are coming on diskettes using programs we have provided to our observers, or by electronic mail. Being up-to-date in our data processing is particularly important for the data support we are providing for the HIPPARCOS satellite and other space research.

At the beginning of the year we discovered that some data were missing from the data files. After investigating the problem in depth we discovered that the cause was a bad spot on the hard disk of the computer. We identified when this problem had begun and developed numerous computer programs to locate the missing data and to add them back to the data files. We have replaced the bad hard disk with a new one and are checking each month's data records and replacing the missing data. We are 50% done. Although this hardware problem was very unfortunate, it did lead us to develop programs to check, compare, and archive our data with greater efficiency. There is now no possibility that data would be lost without being noticed.

#### 1.5. Computerization of the Archival Data from 1911 to 1963

Thanks to a grant from the Perkin Fund and contributions from our members, we are rapidly heading towards completion of the computerization of the archival data from 1911 to 1963.

This summer we hired three part-time students to work on this project. In addition, our former assistant who is now in Korea has continued the computerization of the copies of data he took with him. Including the diskettes he recently sent from Korea, we are now about 95% finished with this project.

Once we check the completeness of the computerization of each observer's data file, we will start the processing of the data and begin merging them with the existing data files.

The end of this decade-long project appears to be in sight!

#### 1.6. Publication of Monographs

Upon developing the computer programs to generate light curves and to evaluate observations on screen efficiently, we have resumed the publication of Monographs at an increased rate. We recently published *Monograph 4 - R Coronae Borealis Light Curves 1843-1990*, dedicated to David W. Rosebrugh, which includes the historical light curve of this star from 1843-1972 and computer generated light curves from 1963-1990. We also published supplements to the first 3 Monographs on SS Cygni, U

Geminorum, and R Scuti, bringing their light curves up to date. These Monographs are dedicated to Dwyndal B. Pettengill, Keith H. and Sylvia S. Danskin, and Thomas R. Williams, respectively. I would like to thank Elizabeth O. Waagen and E. Grant Foster for helping in the preparation of these publications.

The publication of the Monographs are largely due to the generous contribution of an individual towards this project. Each issue is dedicated to this contributor.

## 2. Requests for AAVSO Data and Other Special Projects

AAVSO data - your observing contributions - continue to be highly sought after by astronomers, researchers, educators, students, and writers throughout the world. This year we have filled 191 such requests at Headquarters. A list of these individuals, and their affiliations and locations, are given in Table 4 at the end of my report. Figure 1 is the histogram of the number of requests for AAVSO data filled each year since 1974.

The list below and Figure 2 show the types of variable stars for which AAVSO data have been requested:

- a. Long period variables (38%) - Mira-type (23%); semiregular (15%)
- b. Cataclysmic variables (36%) - dwarf novae (26%); novae, recurrent novae, and nova-like (10%)
- c. R Coronae Borealis stars (12%)
- d. RV Tauri stars (3%)
- e. Sun (2%)
- f. Eclipsing binaries (2%)
- g. Symbiotic stars (2%)
- h. Miscellaneous (5%) - suspected variables, RR Lyrae stars, nebular variables, and Cepheids

The categories listed below and shown in Figure 3 give the areas in which AAVSO data or services have been used this year:

- a. Correlating ground-based and satellite multi-wavelength data with the optical data (30%)
- b. Reference materials on variable stars and related subjects for research and articles in magazines and books (19%)
- c. Scheduling observing runs using ground-based telescopes such as those at Lowell and LaPalma Observatories and satellites such as HIPPARCOS, IUE, and HST (18%)
- d. Simultaneous observing of variable stars during observing runs with ground-based telescopes and satellites (12%)
- e. Data analysis of AAVSO observations (8%)
- f. Science projects for college and high school students (6%)
- g. Reporting variable star observations to the *International Astronomical Union Circulars* for the astronomical community (5%)
- h. Setting up observing programs for high schools, colleges, and universities (1%)

### 2.1. Examples of requests for AAVSO data

I would like to share with you some examples of how the AAVSO data we provided were used this year.

A high school student, Stephanie Cinereski, from Gainesville, Florida, won first prize - the Priscilla and Bart Bok award - with her project "Sunspots and Solar Flares",

in which during her four years of study she found a relationship between solar flares and sunspot numbers. Peter Taylor, the chairman of the AAVSO Solar Division, provided her with a great deal of assistance, and longtime AAVSO member Art Stokes helped her to build her own flare detector.

Dr. Lee Anne Willson and her collaborators have been observing the semiregular variable L2 Puppis with the IUE for 5 years. Recently, when they correlated their MgII flux observations and also the IUE photometry with the AAVSO visual light curves, they detected a decrease in amplitude both in the spectral lines and the optical light curves. They attributed this decrease to an episode of enhanced dust production that may have begun in the atmosphere of this star in 1986. This interesting result inspired them to study the long-term data on L2 Pup. In analyzing about 60 years of AAVSO light curves, they found an aperiodic long-term modulation in the visual light curve. Their study of the observed minus the calculated (O-C) dates of maxima showed a decrease in period by about 11 days per century, with a present period of 136 days. They concluded that this may be a consequence of L2 Pup having recently begun its He-shell burning in a He-shell flash. Their paper has been submitted for publication.

Drs. Geoffrey Clayton and Barbara Whitney are interested in observing with the IUE satellite R CrB stars when they fade, in search of the mechanism and causes of these fades. They had 10 IUE observing runs scheduled this year for which we provided optical information on the state of these stars. They followed RY Sgr through its minimum and our observers provided excellent visual and photoelectric data to use for data correlation.

The recently-classified R CrB star V854 Cen was another of their targets, being observed with the IUE for the first time, as it went through a minimum. Geoff recently informed me that it showed hydrogen lines in its spectra! This finding is quite peculiar, for these very luminous supergiant stars are carbon-rich stars and do not show hydrogen lines in their spectra. So V854 Cen is proving to be a rather interesting R CrB star. Its visual light curve is also interesting for it has long intervals of minima, lasting years. Each time Geoff and Barbara were scheduled to observe this star we would call our member Danie Overbeek in South Africa for the most recent observations. Danie would check his observing records and add another data point for that particular night, and then call us back with his data.

When U Gem had an outburst in November 1990, we informed ROSAT astronomers. They were able to schedule multi-wavelength satellite and ground-based observations. A few days later, one afternoon, Dr. Christopher Mauche called saying he was able to obtain IUE time to observe U Gem that night if it was still up. Since the European observers are 6 - 7 hours ahead of us and could provide that information, we called several of them but they were all clouded out. So I then called our observer Haldun Menali in Istanbul, Turkey, at 11:30 pm his time and asked him, if it was clear, please to check how bright U Gem was that night and inform Dr. Mauche. Haldun was able to observe U Gem and it was indeed still bright. Dr. Mauche was able to obtain an impressive IUE spectrum, for which he was very appreciative. Haldun was so excited to receive a call from the USA and to provide this crucial information for a satellite that he was inspired to write a fascinating article of his experience in a Turkish paper. In it he explained how, upon the receipt of my phone call, he bundled up and rushed out into the cold with his telescope, how he had to fight the clouds, how he had to convince a policeman who had become suspicious of his telescope and his observing attire that his activities were legitimate, and how he finally accomplished making that crucial observation of U Gem at outburst.

Symbiotic stars have been among the objects that the Hubble Space Telescope (HST) has been observing, to resolve and study the nebulosity in which the binary components are embedded. R Aqr was observed with HST in November. Our data,

your observations, indicated that it was near minimum at about magnitude 10.5. We gave this information to Dr. Francesco Paresce, and HST obtained a remarkable image. Later in the year we received another call from Dr. Paresce, asking about the current behavior of RX Pup. This southern-hemisphere star is new in our program, we have a finder chart with a letter sequence for it, and Danie Overbeek is the only observer following it. Upon Dr. Paresce's request we called Danie to ask what RX Pup had been doing recently. Danie said, "Give me a few minutes to check my observing book," and a few minutes later he stated that "it has been rather faint," which was good news. A few hours later he called back giving the magnitudes converted from his letter estimates and also providing an observation of magnitude 11.5 for that night. When I called Dr. Paresce and informed him of the brightness of RX Pup he was very happy, for it was below the limiting brightness of 10.5 for that object for the satellite. With this information they scheduled the observation with HST.

A few months later we received another call from Dr. Paresce. He stated that HST had observed RX Pup again, but that this time "the star was just gone," and no spectral lines were seen except the continuum from the nebulosity. He asked if we could tell him what the star had been doing. Another phone call to Danie solved the mystery, for the star had been very faint, about magnitude 13.

Another variable of recent interest to the HST astronomers is the very luminous S Doradus-type variable AG Carinae, the central star of a planetary nebula. It had been reported to have brightened slightly. Dr. Howard Bond from the Space Telescope Science Institute called to obtain recent information on this star in order to schedule HST observations. Our observations showed that while this star was fainter than magnitude 8 until the middle of 1990, it had brightened slightly and was recently reported to be between magnitude 7.1 and 7.6.

Isn't it exciting that our observers with their backyard observatories and telescopes are helping satellites like HST with their observations!

## 2.2 Special Projects

In addition to the many requests for AAVSO data that we filled this year, we have also been actively involved in a number of other special projects.

### 2.2.1. HIPPARCOS Satellite

This astrometric satellite, now in operation for over 2 years, is obtaining excellent data despite its initial catastrophic problems. Our data support continues, thanks to the grant from NASA. Individuals and groups from all over the world are sending in observations for this satellite at a rate of approximately 70,000 per year! We appreciate greatly the observations by members of the Royal Astronomical Society of New Zealand telefaxed to us each month by Dr. Frank Bateson, their director, and European and some Japanese observations sent to us electronically by M. Emile Schweitzer, the director of AFOEV.

AAVSO data were used for this satellite to:

- a. check bimonthly ephemerides with recent observations;
- b. revise the discordant ephemerides through close communication with the HIPPARCOS Variable Star Coordinator;
- c. perform statistical analyses of the predicted light curves to determine possible correlations among light curve discrepancies;
- d. provide visual and photoelectric data for checking and recalibrating the HIPPARCOS magnitudes on red stars.

During the joint discussion meeting on HIPPARCOS at the International

Astronomical Union (IAU) General Assembly, contributions of variable star observers worldwide and the AAVSO to this mission were gratefully acknowledged by the HIPPARCOS Science Team. In addition, in an exhibit on HIPPARCOS held in Switzerland on the 700th anniversary of the Swiss Confederation our poster contribution to this mission was given a very visible location.

The Input Catalogue and Science Team members are extremely happy with the way observers around the world are providing information for HIPPARCOS and extend their thanks to all.

### 2.2.2. ASTRO-1

After the fourth rescheduling of the mission, ASTRO-1 was launched on Dec 1/2 at 2:00 am. I was invited to see the launch from Cape Kennedy, Florida. It was a splendid and most impressive night launch - my first launch to see in person!

We monitored and provided real time notification of the observing targets - 19 cataclysmic variables and active galactic nuclei. Several stars had outbursts, but the best example came towards the mission's end when our member Robert Hays called Headquarters saying he had observed Z Cam coming up at 3:44 am on December 7th, 1990, and that it had been "down" on the 6th. In the morning we immediately informed ASTRO-1 Science team of the start of the outburst of Z Cam. This notification enabled them to obtain an excellent and unique set of far-ultraviolet spectra of Z Cam on December 9. A few days later we received the following electronic mail from one of the members of the ASTRO-1 Hopkins Ultraviolet Telescope:

"Knox Long and Bill Blair asked me to pass along their good news about Z Cam. They observed it for about 0.7 hours, during a full orbital night, starting just after 8 o'clock CST this morning. The spectra look great, though the astronauts started exercising on the treadmill about two-thirds of the way through the observations, making it difficult to us to keep the star in our slit!.....Please continue to keep us informed as events unfold. We appreciate your help."

The very enthusiastic participation of our observers was greatly appreciated by the Science Team.

Dr. Arthur Davidsen, Principal Investigator for the Hopkins Ultraviolet Telescope, personally thanked me at the IAU Meeting for this participation and the valuable astronomical contribution of the AAVSO to this mission. In addition, in an article on the ASTRO-1 that was published in *Cruz del Sur*, the daily newspaper of the XX1st IAU General Assembly, the contribution of AAVSO members was recognized.

### 2.2.3. ROSAT

We continued to alert our observers to the cataclysmic variables in the survey fields of the ROentgen x-ray SATellite (ROSAT) so that these objects would be monitored closely during the first 6 months (survey mode) of the satellite's operation. Upon receipt of information of outbursts from our observers we notified ROSAT astronomers. This service has been important for scheduling further multi-wavelength observations and data correlation.

### 2.2.4. NASA ADS Catalogue Project

Through a grant from the NASA Astrophysical Data Program, we prepared a special information file on stars in the AAVSO observing program, the time interval for which the AAVSO data exist, and the coverage of each variable, and we placed this file in NASA's Astrophysical Data System (ADS) Master Directory. This file will enable ADS users to access information on AAVSO data immediately.

### 2.2.5. AAVSO Exhibit at American Astronomical Society (AAS) Meeting

For the first time, we had an interactive exhibit at the AAS Meeting held in Philadelphia, in which we featured information on the AAVSO, demonstrated our computer capabilities, and described our data accessibility. This exhibit was very well received by the astronomical community, and several astronomers applied for membership.

## 2.3. Pending Activities

### 2.3.1. Special Education Package on Variable Stars

Our Past President, Prof. John Percy, and I are collaborating on an educational initiative project called Hands-on Astrophysics - Variable Stars in the Physics/Math Lab. We have submitted a proposal to the National Science Foundation (NSF) to prepare an educational package on variable stars in five northern constellations. The package will contain long-term AAVSO data, computer programs for data analysis, slides, finder charts, videos, and manuals. The project is targeted for high school students, but with minor adjustments would be suitable for college level students, and, of course, our members. We were informed that the proposal received favorable reviews, in which some of the strong points were the availability of real data to students and the potential interaction of students with amateur astronomers. We await the final decision of NSF on this major and first educational endeavor of AAVSO.

### 2.3.2. Data Support for the Extreme Ultraviolet Explorer (EUVE) Satellite

The AAVSO has been selected by NASA to coordinate the observations of cataclysmic variable stars by amateur astronomers worldwide during the survey mode of the EUVE satellite, to be launched in early 1992. We are looking into the possibilities of setting up a Computer Bulletin Board for the reporting of observations by observers and electronic access to the information by the astronomical community. This coordination project has been chosen as one of the activities of the International Space Year - a fitting tribute to the AAVSO as it launches another decade of service to astronomy!

## 3. Collaborative Projects with Astronomers

We have been actively involved in the following collaborative projects this year:

- a. HIPPARCOS Input Catalogue Team - Dr. M.-O. Mennessier: Statistical analysis of predicted long period variable light curves in search of trends and correlations with light curve parameters; statistical analysis of AAVSO light curve parameters; revised light curve parameters on HIPPARCOS stars.
- b. HIPPARCOS Input Catalogue Team - Dr. M. Grenon: Evaluation of the revised transformation equations of HIPPARCOS magnitudes through comparison with photoelectric (V) and visual magnitudes of HIPPARCOS Mira variables; study of the relationship between photoelectric (V) and visual magnitudes.
- c. Drs. G. Clayton, University of Colorado, and B. Whitney, Harvard-Smithsonian Center for Astrophysics (CfA): Data analysis of R Coronae Borealis stars.
- c. Dr. M. Karovska, CfA: Data analysis of long period variables.
- d. Dr. R. Buschler, University of Florida: Chaos studies in variable stars.

#### 4. Summary of Observations

Our observers worldwide are the "heart" of the AAVSO. Their enthusiasm and devotion to variable stars are the foundation of our service to the astronomical community.

During fiscal year 1990-91, we received 250,954 visual and photoelectric observations from 575 observers around the world. These totals include 104,659 observations from 206 observers in 42 states of the United States and 146,295 observations from 369 observers in 39 countries. New York with 14,391 observations, Massachusetts with 12,632, and Colorado with 9,193 lead the states in the USA, and South Africa with 24,299 observations, France with 18,812, and Hungary with 14,084 lead the countries abroad.

The grand total of observations recorded since the founding of the AAVSO in 1911 is 7,174,769. This figure includes the revisions to the annual totals that were made, as reported in Volumes 15, No. 1, and 20, No. 1 of this Journal.

Table 1 lists the number of observers and the total observational contribution from each country for 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, annual total of observations, and annual total of inner sanctum observations (magnitude 13.8 or fainter, and/or "fainter than" 14.0 or fainter).

This year 31 observers reported between 1000 and 2000 observations, 10 between 2000 and 3000, 9 between 3000 and 4000, and 4 between 4000 and 5000. John Bortle reported 5,837 and Edward Halbach 5,623 observations. Paul Vedrenne reported 6,632 and Marvin Baldwin 8,064 observations. William Albrecht with 8,269, Gerald Dyck with 12,204, and Danie Overbeek with 16,551 observations are our top three observers this year.

Gerald Dyck sent in the highest number of inner sanctum observations with 8,103 (66% of his observations), followed by Dave York with 1,936, and Michel Verdenet with 1,884 observations.

19 observers reported photoelectric observations, and thanks to Howard Landis' dedication and tireless efforts, all our photoelectric data are computerized, reduced in a standard format, and archived by star. Several scientific papers have already been published using the AAVSO photoelectric data.

My very special thanks go to each and every observer for their contribution. Remember, it's not the quantity but the quality of the observations that count. Sometimes even one observation carries a lot of weight in trying to make sense of a star's behavior.

My special thanks also go to observers for their efforts to provide good coverage of stars in special programs such as the HIPPARCOS, ASTRO-1, and ROSAT satellite programs, and for calling in their observations to Headquarters whenever there is a need for timely information.

#### 5. International Cooperation

Our cooperation with variable star observers' groups around the world continues to increase.

We continue to receive valuable data from members of the Variable Star Section of the Royal Astronomical Society of New Zealand, sent by Director Dr. Frank Bateson. These data on southern long period variables help immensely in refining the annual predictions of maxima and minima for these stars. Dr. Bateson continues to telefax, monthly, the RASNZ observations of HIPPARCOS stars so that they may be



included in our data files and utilized in the checking of the ephemerides prepared for the satellite. We very much appreciate this, and thank Frank for this fast transmission of data and for his usual efficiency.

We acknowledge with appreciation and thanks 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'Etoiles Variables (France)
- c. Astronomical Society of Southern Africa, Variable Star Section
- d. Astronomischer Jugendclub (Austria)
- e. Berliner Arbeitsgemeinschaft für Veränderliche Sterne (Germany)
- f. British Astronomical Association, Variable Star Section (England)
- g. British Astronomical Association of New South Wales (Australia)
- h. Liga Ibero-Americana de Astronomia (South America)
- i. Nederlandse Vereniging Voor Weer-en Sterrenkunde, Werkgroep Veränderlijke Sterren (Netherlands)
- j. Norsk Astronomisk Selskap, Variable Stjernegrupper (Norway)
- k. Planetario e Observatorio Astronomico do Colegio Estadual do Parana (Brazil)
- l. Pleione Változocsillageszlelo Hálózat (Hungary)
- m. Red de Observadores de Estrellas Variables - MIRA (Spain)
- n. Royal Astronomical Society of Canada
- o. Royal Astronomical Society of New Zealand, Variable Star Section
- p. Scandinavian Astronomisk Selskap
- q. Uniao Brasileira de Astronomia, Variable Star Commission (Brazil)
- r. Variable Star Observers League in Japan
- s. Vereniging Voor Sterrenkunde, Werkgroep Veränderlijke Sterren (Belgium)

We continue to exchange publications with observatories, universities, and colleges around the world.

## 6. Membership

This year at the 80th Spring Meeting, held in Charlestown, Rhode Island, we elected 54 new members. Of these, 46 joined as Adult-Annual, 6 as Junior-Annual, and 2 as Sustaining.

This year at the 80th Annual Meeting, held in Cambridge, Massachusetts, we elected 39 new members. Of these, 32 joined as Adult-Annual, 3 as Junior-Annual, and 4 as Sustaining.

This year 9 members changed their membership from Annual to Sustaining, thus supporting the operation of the Association doubly with their dues.

## 7. AAVSO Publications

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

- a. *Journal of the AAVSO*,  
Volume 18, No. 2, edited by Charles A. Whitney and Elizabeth O. Waagen and prepared by Susan M. Power and Jennifer Rogers;  
Volume 19, Nos. 1 and 2, edited by Charles A. Whitney and Elizabeth O. Waagen and prepared by Tanja E. Foulds.

- b. *AAVSO Bulletin 54*, the 1991 predicted dates of maxima and minima of 561 long period variable stars, prepared by Janet A. Mattei.
- c. *AAVSO Monograph No. 4* and *Supplement No. 1* to *Monographs 1, 2, and 3*, prepared by Janet A. Mattei, Elizabeth O. Waagen, and E. Grant Foster.  
*Monograph 4 - Light Curves of R Coronae Borealis 1843-1990*, includes the historical light curve of this star from 1843 to 1972 and computer-generated light curves from 1963 to 1990. The three Supplements to the *Monographs* on *SS Cygni*, *U Geminorum*, and *R Scuti* bring their light curves up-to-date.
- d. *AAVSO Circular*, No. 240 - 251, edited by John E. Bortle, with assistance from Charles E. Scovil and Robert Leitner.
- e. *AAVSO Alert Notices*, No. 133 - 148, prepared by Janet A. Mattei.
- f. *AAVSO 1991 Ephemerides for Eclipsing Binaries and RR Lyrae Stars*, prepared by Gerard Samolyk and Marvin E. Baldwin.
- g. *AAVSO Photoelectric Photometry Newsletter*, Vol. 11, No. 1 - 3, edited and published by John R. Percy.
- h. *AAVSO Solar Bulletin*, Vol. 46, No. 9 - 12; Vol. 47, No. 1 - 8, edited and published by Peter O. Taylor.
- i. *SID Technical Bulletin*, Vol. 1, No. 3; Vol. 2, No. 1 - 3, prepared by Arthur J. Stokes and Peter O. Taylor.
- j. *AAVSO Newsletter*, No. 8, prepared by Tanja E. Foulds.

My very sincere thanks and appreciation go to Marvin E. Baldwin, John E. Bortle, E. Grant Foster, Tanja E. Foulds, Robert Leitner, John R. Percy, Gerard Samolyk, Charles E. Scovil, Peter O. Taylor, Elizabeth O. Waagen, and Charles A. 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 astronomical literature.

## 8. Other Publications with AAVSO Participation

- a. Predicted maxima dates of bright long period variables, ephemerides of a few easy-to-observe stars, and an article on "Variable Stars in Globular Clusters" were published by Janet A. Mattei and John R. Percy in the 1991 *Observer's Handbook* of the Royal Astronomical Society of Canada.
- b. Monthly predictions of maxima dates of bright long period variables were published by Janet A. Mattei in *Sky & Telescope* magazine.
- c. "The Inter-Outburst Behavior of Cataclysmic Variables" was published by Paula Szkody, C. Stablein, Janet A. Mattei, and Elizabeth O. Waagen in the *Astrophysical Journal Supplement*.
- d. "The AAVSO Photoelectric Photometry Program: Non-Robotic Photometry in the Robotic Era" was published by John R. Percy, Howard J. Landis, and Janet A. Mattei in *Robotic Observatories: Present and Future*.
- e. "Scientific Results for the AAVSO Photoelectric Photometry Program" was published by John R. Percy and Janet A. Mattei in *IAPPP Communications*.

## 9. Meetings Attended and Talks Given

It is extremely important for me to attend meetings to bring to the astronomical community's attention the activities of the AAVSO, to make connections for collaborative projects, and, in particular, for possible funding of various projects.

This year has once again been an extremely busy one for me with the large number of meetings attended and talks given. I express my sincere thanks to NASA, AAS, NSF, and the AAVSO for the travel funds that made it possible for me to

attend the following meetings:

a. Meeting of the American Astronomical Society (AAS) in Philadelphia, Pennsylvania, where Elizabeth Waagen, Grant Foster, and I presented an exhibit on the AAVSO in which we took our computers and showed to the astronomical community our data capabilities.

b. Meeting with the HIPPARCOS Variable Star Working Group near Paris, at which we discussed the photometry from HIPPARCOS, the reduction of data, the preparation of the ephemerides using AAVSO data, and the AAVSO data support and the evaluation of ephemerides.

While in France I also attended a special meeting with the HIPPARCOS Variable Star Coordinator, Dr. Mennessier and her assistants. We discussed in detail the stars that show discrepancies between recent data and the predictions and ways to correct these discrepancies. We worked on a collaborative paper submitted to *Astronomy and Astrophysics* on the "Computation of the Ephemerides of Long Period Variables," and worked on a presentation and a poster paper for the IAU General Assembly.

c. Meeting of the XX1st IAU General Assembly in Buenos Aires, Argentina, at which I co-authored both a presentation that was made at the Joint Discussion on HIPPARCOS and a poster paper on large amplitude variable stars. I also gave a presentation on the AAVSO and our educational initiative at the meeting of the Commission on the Teaching of Astronomy. Another talk I was going to present on the archiving of variable star data was canceled due to a fire on the last day of the IAU General Assembly.

d. Meeting of IAU Symposium 151, on the Evolution of Interacting Binaries, in Cordoba, Argentina.

e. Meeting on Astronomical CCD Observing and Reduction Techniques in Tucson, Arizona.

f. Two meetings with NASA's Astrophysics Division Science Operations Management Operations Working Group (SOMOWG), in which I have been serving as a member for the past three years.

I gave talks at the following organizations or educational institutions:

a. HIPPARCOS Variable Star Working Group meeting: Talk on the evaluation of HIPPARCOS ephemerides and finder chart revisions.

b. Basel University: Talk on the AAVSO and its involvement in space research. Dr. Trefzger of Basel University has been very interested in helping us with the revision of our charts. They have quite a significant number of iris photometers with which they are helping to revise the comparison star sequences on some of our charts.

c. Tufts University Teachers' Workshop: Presentation on variable stars.

d. Texas Star Party: Talk on the AAVSO and its involvement within the astronomical community, and contributions of amateur astronomers to space research.

e. Science Amateur Research Meeting, La Paz, Baja, Mexico: Presentation on the AAVSO and its involvement in the HIPPARCOS and forthcoming EUVE satellites.

f. Buenos Aires, Argentina: Two talks on the AAVSO and its involvement in space research, to Asociacion Argentina Amigos de la Astronomia and Centro de Estudios Astronomicas Buenos Aires together with students from Colegio San Jose and Colegio Nacionale de Buenos Aires.

g. Cordoba, Argentina: Talk on the AAVSO and its involvement in space research, to the local amateur astronomers.

Besides my giving these talks, several of our members have also given talks at various meetings. For example, Prof. John Percy has been an ambassador for the AAVSO at every meeting he attends. Gerry Dyck gave a talk on the AAVSO and presented a poster on the AAVSO at the Northeastern meeting of the Astronomical League, Mike Soukup gave a paper on the AAVSO at Los Alamos National Laboratory, and John Griese presented a poster on the AAVSO at the meeting of the Astronomical Society of the Pacific in Laramie, Wyoming. We sincerely thank our members who popularize the AAVSO through their talks and their ambassadorship.

## 10. Personnel at Headquarters

I am very happy to report that this year we have had a great deal of stability with personnel at Headquarters. Everyone working at Headquarters is dedicated to their positions and responsibilities, and many projects that have suffered due to turnovers in past years are beginning to see progress.

Presently the Headquarters staff consist of seven full-time (including myself) employees, five part-time employees, and three volunteer assistants. I would like to express my very sincere appreciation and thanks to Elizabeth O. Waagen, my senior technical assistant; E. Grant Foster, our computer specialist; Pamela Moffat, our administrative assistant; Elisha Polomski, our technical assistant; Tanja E. Foulds, our project and meeting coordinator; Barbara J. Silva, our data entry technician; Michael Saladyga, Sara J. Beck, Jennifer Rogers, Tina Dumas, and Joseph Perkins, our part-time assistants; and Katherine Hazen, Frank McCarrison, and Dorothy Harvey, our volunteer assistants.

## 11. Acknowledgements

Special thanks and gratitude go to Dr. Clinton B. Ford for providing the AAVSO with a permanent Headquarters. We have been in our new Headquarters for over five years and we often wonder how we ever managed in our previous location at 187 Concord Avenue. We thank Clint for his continuing generous support of special projects and activities of the organization.

We have been very fortunate to receive strong financial support from institutions and government agencies this year. We gratefully acknowledge the financial support of the following government agencies:

a. National Aeronautics and Space Administration (NASA), for the grant awards to coordinate observations of 245 large amplitude variable stars and provide data support for the HIPPARCOS satellite for the observations of these stars; to catalogue AAVSO optical data for the NASA Astrophysics Data System Master Directory and the IUE; to provide data support in the observations of cataclysmic variables with the IUE satellite for a collaborative project with Dr. A. Holm; and to provide data support in the observations of SS Cygni with the IUE for a collaborative project with Dr. R. Polidan;

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

Our very special thanks to the following institutions and individuals:

a. The Perkin Fund, for the grant award to complete the computerization of our archival data;

b. American Astronomical Society (AAS), for the AAS international grant funded by NASA and the National Science Foundation (NSF) that made it possible

for me to attend the XXIst IAU General Assembly in Buenos Aires, Argentina, and the CCD School for the travel grant partially funded by NSF to attend the meeting on Astronomical CCD Observing and Reduction Techniques.

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

d. Erindale College of the University of Toronto, for the printing and mailing of the *AAVSO Photoelectric Photometry Newsletter* by Prof. John Percy;

e. Stamford Observatory, for allowing Charles Scovil and John Griese to use the 22-inch telescope to make variable star observations and for Charles to use the facilities of the Observatory to prepare charts and the AAVSO Circular;

f. Drs. Michel Grenon at Geneva Observatory and Charles Trefzger at Basel University in Switzerland, for providing photoelectric and photovisual sequences, respectively, for stars that had no or poor sequences;

g. Our members and an anonymous friend, who have made generous financial contributions towards the operations of the Association.

h. My sincere thanks and appreciation to our Committee Chairmen Marvin E. Baldwin, Kenneth J. Beckmann, Thomas A. Cragg, Robert O. Evans, Clinton B. Ford, Howard J. Landis, Charles E. Scovil, and Peter O. Taylor for carrying out the responsibilities of their respective committees efficiently and with dedication.

i. My special thanks go to Theodore H. N. Wales, our Treasurer, for his dedication, for managing the finances of the Association so well, for giving so much of his time to help with office financial matters, and for his many contributions.

j. I gratefully thank our officers: John R. Percy, our President; Clinton B. Ford, our Secretary; Martha L. Hazen and Wayne M. Lowder, our Vice Presidents; and our council members: Louis B. Cox, Dorrit Hoffleit, Albert V. Holm, Walter S. Houston, Gerard Samolyk, Paul L. Sventek, George Wallerstein, and Barbara L. Welther, for their assistance in the operation of the Association.

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

In its 80th year the AAVSO is in fact quite young, stable, strong in membership, strong with its dedicated observers, strong in its leadership, strong in its visions, and strong in its commitment to continue to make the observations of amateur astronomers available to the astronomical community.

I would like to thank each of you very sincerely for your support through your astronomical and financial contributions to the AAVSO, for it is your support that is the foundation of our success.

Table 1. AAVSO Observer Totals 1990 - 1991 by Country

<i>Country</i>	<i>No. Observers</i>	<i>Obs.</i>	<i>Country</i>	<i>No. Observers</i>	<i>No. Obs.</i>
ARGENTINA	3	3359	JAPAN	20	2112
AUSTRALIA	4	3161	LITHUANIA	2	656
AUSTRIA	2	374	MALAYSIA	1	38
BELGIUM	13	3019	MALTA	1	1395
BOTSWANA	1	524	NAMIBIA	1	6
BRAZIL	4	1493	NETHERLANDS	13	4215
CANADA	21	11171	NEW ZEALAND	30	3354
CHILE	1	203	NORWAY	6	2452
CROATIA	1	123	POLAND	10	8099
CYPRUS	1	74	PORTUGAL	4	347
CZECHOSLOVAKIA	5	2428	ROMANIA	3	3712
DENMARK	6	1887	RUSSIA	1	30
ENGLAND	5	5842	SCOTLAND	1	4
FINLAND	1	1656	SOUTH AFRICA	14	24299
FRANCE	47	18812	SPAIN	28	3596
GERMANY	28	13171	SWITZERLAND	4	926
GREECE	2	1876	TURKEY	1	129
HUNGARY	62	14084	USA	206	104659
INDIA	1	671	ZIMBABWE	2	226
ISRAEL	4	5426			
ITALY	15	1345	TOTAL	575	250,954

Table 2. AAVSO Observer Totals 1990 - 1991 USA by State

<i>State</i>	<i>No. Observers</i>	<i>No. Obs.</i>	<i>State</i>	<i>No. Observers</i>	<i>No. Obs.</i>
ALABAMA (AL)	3	189	NEBRASKA (NE)	1	387
ARIZONA (AZ)	7	1858	NEVADA (NV)	1	4
ARKANSAS (AR)	2	114	NEW HAMPSHIRE (NH)	4	837
CALIFORNIA (CA)	20	4644	NEW JERSEY (NJ)	6	2553
COLORADO (CO)	6	9193	NEW MEXICO (NM)	3	4582
CONNECTICUT (CT)	11	3909	NEW YORK (NY)	14	14391
FLORIDA (FL)	6	3638	N. CAROLINA (NC)	3	71
GEORGIA (GA)	1	131	OHIO (OH)	4	1373
HAWAII (HI)	2	8285	OKLAHOMA (OK)	1	2
ILLINOIS (IL)	9	5807	PENNSYLVANIA (PA)	8	3413
INDIANA (IN)	5	8566	RHODE ISLAND (RI)	2	91
IOWA (IA)	4	248	S. CAROLINA (SC)	1	11
KANSAS (KS)	2	71	S. DAKOTA (SD)	1	483
KENTUCKY (KT)	1	2	TENNESSEE (TN)	2	63
LOUISIANA (LA)	1	34	TEXAS (TX)	17	2679
MAINE (ME)	4	313	VERMONT (VT)	4	670
MARYLAND (MD)	6	1058	VIRGINIA (VA)	7	4000
MASSACHUSETTS (MA)	8	12632	WASHINGTON (WA)	4	280
MICHIGAN (MI)	3	346	WEST VIRGINIA (WV)	3	123
MICRONESIA (FM)	1	11	WISCONSIN (WI)	11	5959
MINNESOTA (MN)	4	1452			
MISSOURI (MO)	3	186	TOTAL	206	104,659

Table 3. AAVSO Observers, 1990 - 1991

Code	Name	No. Obs.	No. I.S.	Code	Name	No. Obs.	No. I.S.
AAP	A. ABBOTT, CANADA	505	22	CGG	G. CONLIN, WA	8	
AMT	M. ADAMS, FL	181	2	CK	S. COOK, AR	59	
AJO	* J. AFONSO, SPAIN	29		COM	T. COOPER, SOUTH AFRICA	2623	105
AB	W. ALBRECHT, HI	8269	70	CMK	M. COUCKE, OK	2	
ALN	R. ALLISON, IA	63		COA	A. COULOMBE, CANADA	11	
AAA	A. ALVES, BRAZIL	461		CJT	* J. COUTINHO, PORTUGAL	3	
AMO	M. AMORETTI, ITALY	26	2	COW	H. COWARD, TX	138	
AMS	A. AMOSSE, FRANCE	45		CR	T. CRAGG, AUSTRALIA	3057	841
AJ	J. ANDERER, AR	55		CJH	J. CRAST, PA	203	
AOD	O. ANDERSEN, NORWAY	20	1	CRZ	R. CREWS, KY	2	
AJR	J. ANDRESS, AZ	151		CRM	R. CRUMRINE, NY	11	
ARN	L. ARNOLD, FRANCE	19	1	CSM	M. CSUKAS, ROMANIA	285	2
ARO	B. AROQUIER, FRANCE	11		CUO	D. CUROTT, AL	181	
BYG	^ G. BABCSANY, HUNGARY	6		DAH	H. DAHLE, NORWAY	467	21
BM	M. BALDWIN, IN	8064		DMI	M. DAHM, GERMANY	326	
BMO	* M. BARANDA-GOMEZ, SPAIN	40		DOC	^ C. DANKO, HUNGARY	9	
BKJ	^ J. BARANKAI, HUNGARY	14		DYJ	* J. DAUBY, FRANCE	165	
BBC	* R. BARBOSA, SPAIN	5		DAJ	J. DAVIS, MD	2	1
BSF	S. BARNHART, OH	401	4	DMA	M. DAVIS, VA	6	
BSR	S. BARONI, ITALY	364		DBE	G. DE BEER, SOUTH AFRICA	19	
BTZ	^ I. BARTA, HUNGARY	54		DCA	* A. DE CARHALVO, PORTUGAL	62	
ABA	A. BARTOLINI, ITALY	14		DBR	* B. DECOTTIGNIES, FRANCE	24	
BBA	B. BEAMAN, IL	152	21	DEA	R. DEMARTINO, CT	243	8
BVD	D. BEARD, PA	195		DFR	F. DEMPSEY, CANADA	120	
BEX	^ Z. BENCZE, HUNGARY	1		DNO	O. DEREN, POLAND	2400	
BTY	T. BENNER, PA	700	186	DVF	& F. DE VRIES, NETHERLANDS	5	
BBE	^ B. BERENTE, HUNGARY	11	1	DIZ	* J. DIAZ, SPAIN	37	
BEB	R. BERG, IN	38		DPA	A. DIEPVENS, BELGIUM	1718	51
BIO	P. BERRIOT, FRANCE	21		DRG	R. DIETHELM-SUTTER, SWITZERLAND	14	
BSA	M. BESANA, ITALY	3		DRD	R. DIETZ, CO	6	
BIC	* L. BICHON, FRANCE	266	1	DIL	W. DILLON, TX	29	
BTX	% L. BIGGINS, NEW ZEALAND	3		MDS	M. DIONISI, ITALY	111	22
BIL	G. BILODEAU, CA	11	7	DAX	% A. DODSON, NEW ZEALAND	42	1
BGB	B. BLAGG, TX	112		DPL	P. DOMBROWSKI, CT	945	155
BLD	D. BLANE, SOUTH AFRICA	1860		GDB	^ G. DOMENY, HUNGARY	13	
BAX	A. BOATTINI, ITALY	353	78	DZS	S. DOMINGUEZ, ARGENTINA	3188	
BOH	D. BOHME, GERMANY	192		DOO	^ R. DOMOTOR, HUNGARY	7	
BOE	J. BOREL, CA	63	4	DXX	% S. DREVES, NEW ZEALAND	26	2
BRJ	J. BORTLE, NY	5837	1767	DAB	A. DUKES, SC	11	
BJB	* J. BOSCH, SWITZERLAND	45		DMO	* M. DUMONT, FRANCE	454	
BMU	& R. BOUMA, NETHERLANDS	39	1	DUP	* P. DUPASQUIER, FRANCE	252	13
BPI	P. BOURRET, FRANCE	47		DGP	G. DYCK, MA	12204	8103
BDS	R. BOYD, CA	47		EKR	^ K. EDES, HUNGARY	21	
BZK	* R. BRANZK, GERMANY	136		EWB	W. EDWARDS, TN	60	
BAQ	A. BRAS, FRANCE	84		EL	J. ELLERBE, SPAIN	13	
BDL	D. BRESLIN, MA	43		EPE	P. ENSKONATUS, GERMANY	9	
BTB	T. BRETJ, MN	18	1	EWK	K. EWING, FL	6	
BSM	S. BRINCAT, MALTA	1395	9	FMA	M. FADDA, ITALY	50	
BKF	F. BROCKMEIER, GERMANY	8		FEO	^ E. FARKAS, HUNGARY	25	
BOS	E. BROENS, BELGIUM	203		FMX	% F. FARRELL, NEW ZEALAND	43	
BBT	R. BROWNING, NJ	387		FJB	J. FAURE, FRANCE	23	
BYV	* Y. BRUCHER, FRANCE	119		FCA	C. FAUSEL, IN	33	
BOA	* A. BRUNO, FRANCE	35	3	FJH	& H. FEIJTH, NETHERLANDS	3414	801
BDX	% D. BRUNT, NEW ZEALAND	6		FKJ	^ J. FEKETE, HUNGARY	41	
BSO	S. BURGESS, ME	4		FRF	^ R. FIDRICH, HUNGARY	675	34
BUI	* H. BURILLIER, FRANCE	71		FTE	T. FISHER, NY	18	
BFS	J. BUTLER, CT	6		FLT	R. FLEET, ENGLAND	53	28
CMT	* R. CAMELOT, FRANCE	17		FDA	^ A. FODOR, HUNGARY	28	
CMP	R. CAMPBELL, FL	339	3	FFC	^ F. FOLDES, HUNGARY	948	3
CFN	* F. CAMPOS, SPAIN	246		FMR	M. FONOVICH, CROATIA	123	
CJA	J. CAMPOS, SOUTH AFRICA	50		FD	C. FORD, CT	41	29
CEA	* B. CANDELA, FRANCE	4		FT	G. FORTIER, CANADA	48	
CNU	* N. CARDOSO, SPAIN	14		FEL	E. FRANCIOSINI, ITALY	9	
CAT	J. CASTANO, SPAIN	50		FBN	B. FRASER, SOUTH AFRICA	129	4
CYA	A. CICHY, POLAND	1124		FSR	R. FRASER, SCOTLAND	4	
TCE	* E. CIFUENTES-TORRES, SPAIN	63		FYE	E. FREY, TX	3	
CIR	R. CINTRON, VT	40		FML	& M. FRIDLUND, NETHERLANDS	44	
CLK	W. CLARK, MO	40		FAA	A. FROSINA, ITALY	26	
CWP	W. CLARKE, CA	438		FMG	G. FUGMAN, IA	104	2
CLH	J. CLAUS, BELGIUM	4		GWB	W. GABLE, VA	27	
CNL	O. COLE ARNAL, CANADA	183		GBZ	O. GABZO, ISRAEL	4064	
COL	P. COLLINS, CO	1195		GEC	E. GALE, IA	70	
CMG	& G. COMELLO, NETHERLANDS	320	56	GCZ	J. GANCARZ, NE	387	1

Table 3. AAVSO Observers, 1990 - 1991 (continued)

Code	Name	No. Obs.	No. I.S.	Code	Name	No. Obs.	No. I.S.
GXX	% T. GARFIELD, NEW ZEALAND	5		IFJ	% F. IVES, NEW ZEALAND	589	
GKR	R. GECKELER, GERMANY	52		JCA	* C. JACINTO, PORTUGAL	13	
GCP	C. GERBER, GERMANY	487		JJA	J. JAHN, GERMANY	5	
GMJ	M. GEYSER, SOUTH AFRICA	75		JAJ	J. JANSSENS, BELGIUM	50	
GIR	A. GILCHRIST, TX	26		JKK	K. JENSEN, NORWAY	2	
GLN	* J. GILLAIN, BELGIUM	298		JCH	& C. JOHANNINK, NETHERLANDS	10	
GSL	S. GILLESPIE, TX	10		JRJ	& R. JOHANNIS, NETHERLANDS	7	
GVN	V. GIOVANNONE, NY	123		JOG	G. JOHNSON, MD	204	3
GLF	F. GLENN, NY	1		JR	R. JOHNSON, MD	44	3
GLW	W. GLENN, NY	1		JON	K. JONCKHEERE, BELGIUM	66	
GFV	W. GOFF, CA	17	7	JA	% A. JONES, NEW ZEALAND	488	1
GHA	* H. GOLDHAHN, GERMANY	250		JRW	R. JONES, SOUTH AFRICA	1862	11
GPX	% W. GOLTZ, NEW ZEALAND	426	39	JUL	J. JOOSTE, SOUTH AFRICA	30	
GOT	* T. GOMEZ, SPAIN	4		KAP	^ P. KALOCZY, HUNGARY	61	
GON	R. GONCALVES, SPAIN	6		KB	W. KAMINSKI, SD	483	22
GZN	* A. GONZALES, SPAIN	38		KEJ	E. KATO, AUSTRALIA	61	1
GNI	* N. GONZALEZ, SPAIN	57		KTL	L. KEITH, WI	412	
GOP	P. GOODWIN, LA	34	2	KDK	D. KELLINGTON, CANADA	71	
GFG	F. GRAHAM, PA	4		KEK	K. KELLY, NM	40	12
GRL	B. GRANSLO, NORWAY	1479	19	KKP	& P. KERKVLJET, NETHERLANDS	54	
GJF	J. GRIESE, WI	38		KSZ	^ S. KESZTHELY, HUNGARY	1	
GRI	J. GRIESE, III, CT	1357	930	KMR	* M. KIDGER, SPAIN	7	
GOC	R. GROCHOWSKI, POLAND	341		KRB	R. KING, MN	468	163
GSC	* C. GROS, FRANCE	28		KSI	* S. KIYOTA, JAPAN	7	
GML	M. GRUNANGER, AUSTRIA	59		KON	O. KLINTING, DENMARK	36	
GCT	C. GRUNNET, DENMARK	208		KPE	* P. KLIX, GERMANY	31	
GUB	G. GUBBELS, BELGIUM	111		KGT	G. KNIGHT, ME	123	
GUN	* J. GUNTHER, FRANCE	1510	17	KSP	S. KNIGHT, ME	180	30
GMF	M. GUTRIDGE, IL	43		KS	J. KNOWLES, NH	66	
GYP	* P. GYENIZSE, HUNGARY	42		KOC	^ A. KOCISIS, HUNGARY	968	1
HCS	^ C. HADHAZI, HUNGARY	55		KDF	D. KOCYLA, CT	11	
HTY	T. HAGER, CT	301	93	KKF	K. KOEHLER, AZ	474	1
HK	E. HALBACH, CO	5623	146	KLG	G. KOHL, AZ	45	
HTT	P. HALLETT, CANADA	170		KHL	M. KOHL, SWITZERLAND	785	
HMG	^ G. HALMI, HUNGARY	249		KRS	R. KOLMAN, IL	1573	201
HMR	R. HAM, CO	1588	10	KMA	M. KOMOROUS, CANADA	1007	
HAN	J. HANNON, CT	84		KMC	M. KONACKI, POLAND	26	
HDC	D. HARPER, NC	40		KRF	R. KONIOR, NY	31	2
HIX	% E. HARRIS-HARRIES, NEW ZEALAND	40		KYA	^ A. KONYA, HUNGARY	56	
HAV	R. HARVAN, MD	168	81	KOS	A. KOSA-KISS, ROMANIA	1669	7
HGY	R. HARVEY, NC	48		KOA	M. KOSHIRO, JAPAN	46	9
HKP	K. HASLAG, VA	14		KNO	* N. KOSKAS, FRANCE	18	
HDO	^ D. HAVASSY, HUNGARY	25		KAV	S. KOSHUAPPAS, CYPRUS	74	
HAB	R. HAYS, IL	1024		KVI	^ I. KOVACS, HUNGARY	102	
HY	A. HEASLEY, FL	1		KRN	N. KRIEK, SOUTH AFRICA	5	
HLS	L. HEEN, NORWAY	391		KIS	G. KRISCH, GERMANY	639	
HEF	M. HEIFNER, CO	733	195	KRK	K. KRISCIUNAS, HI	16	1
HEN	C. HENSHAW, BOTSWANA	524		KRU	J. KRUTA, CZECHOSLOVAKIA	11	
HGC	% G. HERDMAN, NEW ZEALAND	216		KSA	A. KUCINSKAS, LITHUANIA	574	
HJN	J. HERS, SOUTH AFRICA	453	85	KPG	& G. KUIPERS, NETHERLANDS	35	
HES	C. HESSELTINE, WI	43		LDT	^ T. LADANYI, HUNGARY	9	
HEV	^ Z. HEVESI, HUNGARY	137		LAR	R. LAMBERT, TX	236	21
HE	L. HIETT, VA	3072		LND	H. LANDIS, GA	131	
HIN	* A. HIGI, HUNGARY	6		LTV	T. LANGHANS, CA	30	
HIM	M. HILL, MA	49		LMF	M. LARA, BRAZIL	313	
HRI	R. HILL, AZ	363		LKG	K. LARSON, CA	2084	292
HZR	* R. HINZPETER, GERMANY	51		LSK	S. LASKOWSKI, WI	39	
HGI	M. HIRAGA, JAPAN	9		LZT	T. LAZUKA, IL	1296	
HIR	Y. HIRASAWA, JAPAN	289	48	LEB	* R. LEBERT, FRANCE	331	
HSK	* K. HIROSAWA, JAPAN	96		LST	* S. LECOMTE, FRANCE	75	
HWD	W. HODGSON, ENGLAND	52		LNZ	G. LENZ, CT	20	
HFF	T. HOFFELDER, CA	33		LSX	% MRS. A. LESLIE, NEW ZEALAND	27	
HFO	* G. HOFFER, GERMANY	182		LEV	A. LEVEQUE, CA	79	
HDN	D. HOLMES, AL	5		LWO	W. LEWANDOWSKI, POLAND	664	
HZJ	J. HOLTZ, PA	239		LGS	* C. LIANGORIDIS, FRANCE	7	1
HOO	& G. HOOGEVEEN, NETHERLANDS	76		LIW	W. LILLER, CHILE	203	53
HRB	P. HORNBY, CA	646	1	LOB	* J. LOBO-RODRIGUEZ, SPAIN	55	
HJA	J. HUDSON, CA	110		LWT	T. LOHVINENKO, CANADA	252	
HOX	% O. HULL, NEW ZEALAND	170		LGN	G. LOPRIORE, MA	58	
IML	M. IDEM, NY	3571	1658	LRY	^ M. LORINCZ, HUNGARY	15	
IDA	* M. IIDA, JAPAN	3		LEJ	E. LOS, NH	23	
IPA	P. INGRASSIA, ARGENTINA	101		LVT	J. LOVETT, NH	745	
ITA	* A. ITOH, JAPAN	4		LTB	T. LUBBERS, MN	372	



Table 3. AAVSO Observers, 1990 - 1991 (continued)

Code	Name	No. Obs.	No. I.S.	Code	Name	No. Obs.	No. I.S.
LBG	G. LUBCKE, WI	1547	80	OJO	J. OLESEN, DENMARK	176	
LKA	K. LUEDEKE, TX	40		ONO *	O. ONODERA, JAPAN	168	
LEX	% E. LUMLEY, NEW ZEALAND	211		OV	E. ERAVEC, NY	4055	
LBB	B. LUX, PA	111		ORW	W. ORTEL, RI	71	
MDW	W. MACDONALD, CANADA	154	1	OJR	J. OSORIO RIPERO, SPAIN	2098	329
MJY	J. MACQUARRIE, NY	50		OB	D. OVERBEEK, SOUTH AFRICA	16551	227
MDH	H. MADDOCKS, VA	125		PLA	A. PADILLA FILHO, BRAZIL	518	
MZG *	G. MAINTZ, GERMANY	266		PDI *	D. PALACIOS, SPAIN	6	
MLI	L. MAISLER, NY	465		PAO	S. PAOLANTONIO, ARGENTINA	70	14
MKN *	N. MAKIGUCHI, JAPAN	41		PCA	^ C. PAP, HUNGARY	5	
MKE	R. MANSKE, WI	325	5	PPS	^ S. PAPP, HUNGARY	2556	120
MJZ *	J. MANZORRO, SPAIN	500		PJX	% J. PARK, NEW ZEALAND	2	
MCO	M. MARCARIO, TX	19	4	PAK	^ A. PATAK, HUNGARY	32	
MRO *	G. MAREKFA, GERMANY	116		PLZ	L. PAZZI, SOUTH AFRICA	15	
MIC *	C. MARILLER, FRANCE	33		PDN	D. PEARCE, TX	5	
MTB	^ T. MARONICS, HUNGARY	11		PN	A. PEARLMUTTER, MA	161	
MTQ *	E. MARTIN-MATEOS, SPAIN	13		PEI	E. PEDERSEN, DENMARK	25	
MJH *	J. MARTINS, SPAIN	52		PEG *	C. PEGUET, FRANCE	97	
MRX	H. MARX, GERMANY	1581	64	PMR	M. PERALA, FINLAND	1656	70
MSM *	M. MASSON, FRANCE	12		PAE	A. PEREIRA, PORTUGAL	269	2
MAV	D. MATSNEV, RUSSIA	30		PKI	O. PIECHOWSKI, MI	35	
MGE	G. MAVROFRIDIS, GREECE	1814		PTZ	J. PIETZ, GERMANY	1079	
MYR	E. MAYER, OH	846	364	PGR	^ T. POLGAR, HUNGARY	6	
MJW	J. MAYER, PA	1453	43	PLR	R. POOLE, PA	508	17
MDV	D. MCCOLLUM, VA	190		PLL	M. PORCELLINO, IL	4	
MDP	P. MCDONALD, CANADA	4		PWR	R. POWASKI, OH	3	
MGG	G. MCGINNIS, WA	27	3	PHD	H. POWELL, TN	3	
MKJ	J. MCKENNA, NJ	1424	65	POX	M. POXON, ENGLAND	2708	69
MRH	R. MCNAUGHT, AUSTRALIA	9		PDO	D. PRAY, RI	20	
MIB	I. MEDIAAS, NORWAY	93		PCJ	C. PREDOM, CT	271	
MED	K. MEDWAY, ENGLAND	1983		PDQ	D. PROUST, FRANCE	29	
MHI	H. MENALI, TURKEY	129		PJI	J. PRYAL, WA	10	
MNZ	E. MENEGUZZO, ITALY	37		PUP	P. PUFFER, WI	1	
MDI	I. MIDDLEMIST, ENGLAND	1046	1	RAA	R. RAASCH, TX	103	1
MOK	O. MIDTSKOGEN, NORWAY	1309	479	RKE *	K. RAETZ, GERMANY	67	
MCO	C. MILLER, NJ	3		RKM *	M. RAETZ, GERMANY	82	
MZS	^ A. MIZSER, HUNGARY	887	68	RCQ	^ R. RECSEK, HUNGARY	21	
MCE	E. MOCHIZUKI, JAPAN	237		RJI	J. RIGGS, NY	114	5
MMI	M. MOELLER, GERMANY	2739		RGH	G. RIPLEY, ME	6	
MGY	^ I. MOGYOROSI, HUNGARY	45		RFR	P. ROBBINS, KS	18	
MOD	D. MOHRBACHER, OH	123		RLR	R. ROBINSON, WV	7	
MOL	J. MOLNAR, VA	566		RPT	P. ROCHFORD, AL	3	
MOZ	^ Z. MOLNAR, HUNGARY	18		RFE *	F. RODRIGUES, SPAIN	27	
MMM *	M. MOMOSE, JAPAN	77		RJA *	J. ROHART, FRANCE	16	
MAR	R. MONELLA, ITALY	88	63	RGB	G. ROSENBERG, CA	71	
MJ	A. MONTAGUE, MI	214		ROG	G. ROSS, MI	97	47
MF	F. MONTAGUE, MA	90	1	RGL	G. ROTEM, ISRAEL	13	
MJO	J. MORGAN, AZ	420	116	RR	R. ROYER, CA	335	33
MOI *	E. MORILLON, FRANCE	397	7	RJV *	J. RUIZ, FRANCE	111	
MOQ *	R. MORISHITA, JAPAN	19		RPB	H. RUMBALL-PETRE, FM	11	
MYM *	M. MORIYAMA, JAPAN	59		SLX *	A. SAILLOL, FRANCE	13	
MLE	L. MORO, ITALY	47		SJO	A. SAJTZ, ROMANIA	1758	
MOW	W. MORRISON, CANADA	3829	108	SSU	S. SAKUMA, JAPAN	514	43
MKH	S. MUKHERJEE, INDIA	671		SEQ *	E. SALAZAR, SPAIN	46	
MDU	D. MULINSKI, POLAND	941		SON	O. SALTZER, NJ	6	
MNS *	S. MUNIER, FRANCE	1		SAH	G. SAMOLYK, WI	3082	5
MGX	% A. MURRAY, NEW ZEALAND	7		SEF	F. SANCHEZ, SPAIN	60	
NAG	^ G. NAGY, HUNGARY	78		SNZ	^ J. SANCHEZ, SPAIN	2	
NZO	^ Z. NAGY, HUNGARY	1041		SGI *	M. SANTOS, SPAIN	68	
NMA	A. NAGY-MELIKUTI, HUNGARY	188		SPO *	C. SAPI, HUNGARY	480	3
NTL	M. NATALE, NJ	36		SGU	^ G. SARI, HUNGARY	189	
NTO	T. NEJESCHLEBA, CZECHOSLOVAKIA	66		SCO	T. SCHELL, TX	57	
NLY	% P. NELSON, NEW ZEALAND	15	5	SPK	^ P. SCHEEER, GERMANY	4228	614
NRH	R. NELSON, CANADA	150	7	SMF	F. SCHMIDT, NY	17	
NMN *	J. NEUMAN, GERMANY	31		SAQ	& A. SCHOLTEN, NETHERLANDS	99	
NBY	J. NORDBY, MN	594	21	SLZ	G. SCHOTT, GERMANY	10	
NTS	T. NORTON, WV	18		SCZ *	E. SCHWEITZER, FRANCE	2151	76
NOG	G. NOWAK, VT	144		SCX	E. SCLARONI, MO	53	
OCL	M. O'CONNELL, NH	3		SCE	C. SCOVIL, CT	630	296
OCN	S. O'CONNOR, CANADA	84		SEZ *	J. SEGONZAT, FRANCE	73	
OES	D. OESPER, IA	11		SRZ	^ Z. SERES, HUNGARY	27	
OER	E. OFEK, ISRAEL	935		SEN	& P. SERNE, NETHERLANDS	29	
OKJ	% J. O'KANE, NEW ZEALAND	60		SVY	N. SEVERIJNS, BELGIUM	35	

Table 3. AAVSO Observers, 1990 - 1991 (continued)

Code	Name	No. Obs.	No. I.S.	Code	Name	No. Obs.	No. I.S.
SHS	S. SHARPE, CANADA	3347	38	VDS	J. VALDES, IL	9	
SSA	A. SHARPLESS, WA	235	4	VBR	H. VAN BEMMEL, CANADA	134	3
SHO	O. SHEMMER, ISRAEL	414		VBP	P. VAN BLOMMESTEIN, SOUTH AFRICA	4	
SHW	W. SHERMAN, IN	367		VCP	P. VAN CAUTEREN, BELGIUM	210	44
SIO	* H. SHIOI, JAPAN	169		VDH	& H. VAN DEN HIL, NETHERLANDS	83	
SIH	* M. SILHOL, CZECHOSLOVAKIA	2217		VDL	J. VAN DER LOOY, BELGIUM	72	
SNE	N. SIMMONS, WI	139	69	VNL	F. VAN LOO, BELGIUM	8	
SJX	J. SMIT, SOUTH AFRICA	623		VWS	J. VAN WASSENHOVE, BELGIUM	11	
SMO	M. SMITH, AZ	372		VGA	^ B. VARGA, HUNGARY	2	
SRV	R. SMITH, CA	10		VED	* P. VEDRENNE, FRANCE	6632	
SNX	L. SNYDER, NV	4		VMA	* M. VELASCO, SPAIN	28	
SSZ	^ Z. SOOS, HUNGARY	109		VC	% C. VENIMORE, NEW ZEALAND	12	
SOH	H. SORENSEN, DENMARK	166		VDA	* D. VERDE, SPAIN	22	
SOI	M. SOUKUP, NM	61		VET	* M. VERDENET, FRANCE	3451	1884
SJZ	J. SPEIL, POLAND	1420		VEZ	T. VEZAUSKAS, LITHUANIA	82	
SSP	P. STAMUS, CO	48		VIA	* J. VIALLE, FRANCE	29	
SYJ	J. STANBURY, MA	24		VNZ	^ Z. VICIAN, HUNGARY	319	6
SKS	T. STECKNER, CANADA	10		VRA	* J. VIEIRA, FRANCE	64	
STF	G. STEFANOPOULOS, BRAZIL	201		VIO	^ I. VIGH, HUNGARY	21	
STI	P. STEFFY, FL	2380	280	VGP	* P. VIGNIER, FRANCE	422	13
SET	C. STEPHAN, FL	731	43	VIN	J. VINCENT, ZIMBABWE	72	
SLW	L. STEVENS, CANADA	18		VII	* I. VINCZE, FRANCE	91	
SWT	R. STEWART, NJ	697	86	VIT	* F. VIOLAT, FRANCE	17	
STO	N. STOKIDIS, GREECE	62		VFK	* F. VOHLA, GERMANY	239	
STO	M. STONE, MO	93	2	VOI	^ P. VOITH, HUNGARY	3	
SAX	A. STUDER, VT	3		VJS	S. VOJTECH, CZECHOSLOVAKIA	84	
SUK	M. STUKA, CA	5		VOL	W. VOLLMANN, AUSTRIA	315	
SGH	* H. SUGAI, JAPAN	19		WMX	% S. WADHWA, NEW ZEALAND	60	
SPP	P. SULLIVAN, CA	19		WLC	L. WADLE, TX	1	
SUS	D. SUSSMANN, GERMANY	225		WKP	P. WALKER, VT	483	51
SVN	P. SVENTEK, TX	1685	19	WND	* D. WALLIAN, FRANCE	59	
SWV	D. SWANN, TX	158		WSM	S. WALSH, ZIMBABWE	154	19
SSW	S. SWIERCZYNSKI, POLAND	69		WGX	% T. WARDLE, NEW ZEALAND	11	
SBT	^ R. SZABO, HUNGARY	218		WQX	% P. WARNES, NEW ZEALAND	20	
SZW	R. SZAJ, POLAND	415		WSI	R. WASATONIC, MD	119	
SZX	^ Z. SZALMA, HUNGARY	12		WMA	M. WATANABE, JAPAN	12	
SKV	^ L. SZARKA, HUNGARY	1351	13	WTT	* T. WATANABE, JAPAN	155	
SAO	^ A. SZAUER, HUNGARY	65		WNY	* Y. WATANABE, JAPAN	29	
SNO	^ L. SZENTASKO, HUNGARY	774	332	WDX	% MRS. D. WATSON, NEW ZEALAND	140	
SZK	^ G. SZITKAY, HUNGARY	17		WER	R. WEBER, KS	53	
SOO	^ A. SZOLLOSI, HUNGARY	236	2	WEI	D. WEIER, WI	318	34
SUZ	^ P. SZUTOR, HUNGARY	489	2	WC	R. WEND, IL	1607	1
THX	* S. TAKAHASHI, JAPAN	39		WET	T. WESELAK, POLAND	699	
TAM	* M. TALERO, FRANCE	29		WEP	F. WEST, MD	521	
TPI	* P. TASSIE, FRANCE	177		WTJ	J. WEST, TX	10	3
TDB	D. TAYLOR, CANADA	670	85	WTK	^ K. WIESZT, HUNGARY	232	
TNX	% N. TAYLOR, NEW ZEALAND	270	6	WI	D. WILLIAMS, IN	64	2
TBA	B. TEKATCH, CANADA	6		WJG	J. WILLIAMS, NC	1	
TPS	^ I. TEPLICZKY, HUNGARY	595		WPX	% P. WILLIAMS, NEW ZEALAND	168	
TSE	* S. TERABAYASHI, JAPAN	68		WLX	% L. WILLIAMSON, NEW ZEALAND	115	
TAX	A. THOMAS, GERMANY	70		WJY	J. WILMS, BELGIUM	233	
TMR	R. THOMAS, CA	127		WDN	D. WILSON, TX	47	
THR	R. THOMPSON, CANADA	398		WSN	T. WILSON, WV	98	33
TRP	R. THOMPSON, NAMIBIA	6		WUX	% R. WINNETT, NEW ZEALAND	18	
THU	* B. THOUET, FRANCE	578		WUL	* U. WITT, GERMANY	26	
TRL	R. TOGNI, AZ	33		WNG	L. WONG, MALAYSIA	38	
TMB	M. TOMBELLI, ITALY	89	3	WJM	J. WOOD, CA	323	
TTK	^ K. TOTI, HUNGARY	24		WRO	R. WRIGHT, CA	148	
TFN	F. TRAYNOR, AUSTRALIA	34		YRK	D. YORK, NM	4481	1936
TRF	C. TREFZGER, SWITZERLAND	82	9	ZFE	^ F. ZAGYI, HUNGARY	60	
TBX	% B. TREGASKIS, NEW ZEALAND	131		ZAG	^ G. ZAJACZ, HUNGARY	171	
TDM	D. TROIANI, IL	99	1	ZLT	^ T. ZALEZSAK, HUNGARY	221	
TCK	G. TUCKER, MA	3		ZAM	M. ZANOTTA, ITALY	12	
TDX	% D. TURNER, NEW ZEALAND	31		ZUT	S. ZANUT, ITALY	116	
TYS	R. TYSON, NY	97		ZEB	* E. ZISCHE, GERMANY	44	
UND	E. UNDERHAY, CA	49		ZT	R. ZIT, WI	15	
VFR	* F. VACLIC, CZECHOSLOVAKIA	50		ZSO	^ H. ZSOLT, HUNGARY	2	

\* also member of or observations received by AAVSO through Association Française des Observateurs d'Etoiles Variables (AFOEV).

& also member of Nederlandse Vereniging Voor Weer-en Sterrenkunde, Werkgroep Veranderlijke Sterren (Netherlands).

^ also member of or observations received by AAVSO through Pleione Váltózcillag-eszlelo Hálózat (PHV) (Hungary).

% also member of or observations received by AAVSO through Royal Astronomical Society of New Zealand (RASNZ).

Table 4. Individuals Requesting AAVSO Data During Fiscal Year 1990 - 1991

<i>Name</i>	<i>Affiliation</i>
E. Baggott	Virginia
L. Bartsch	Sahuaro High School, AZ
T. Bedding	Sydney, Australia
P. Benson	Wellesley College, MA
W. Blair (3)	Johns Hopkins University, MD
R. Bloomer	Boulder, CO
T. Brandon	Los Angeles, CA
R. Buschler	Gainesville, FL
G. Burgess	MIT, Lincoln Laboratory, MA
D. Burney	Astronomy Magazine, WI
J. Cannizzo	Kenyon College, OH
S. Castro	Arnold, MD
D. Caton	Appalachian State University, NC
G. Clayton (15)	University of Colorado, CO
D. Cook	<i>Scholastic</i> Magazine
F. Cordova (3)	Pennsylvania State University, PA
B. Corner	Lincoln, NE
F. Crifo (3)	Observatoire de Meudon, France
M. De Groot	Armagh Observatory, Ireland
R. DeMartino	West Haven, CT
J. Drew (3)	Oxford University, England
S. Duck (3)	University of Birmingham, England
H. Duerbeck	Westfaelische Wilhems Universitaet, Germany
D. Engels	Universitat Hamburg, Germany
M. Gerbaldi	Institut d'Astrophysique, France
P. Gorham	California Institute of Technology, CA
L. Gorski	Gillespie, IL
M. Grenon (6)	Observatoire de Geneve, Switzerland
E. Guinan	Villanova University, PA
E. Halbach	Estes Park, CO
S. Hanna	Harrowsmith, Canada
M. Hazen	Harvard-Smithsonian Center for Astrophysics, MA
A. Heske	European Space Agency, Netherlands
C. Hoalis	Sahuaro High School, AZ
F. Hogan	Huntsville, AL
B. Hostenstein	University of Pennsylvania, PA
J. Holtz	Coraopolis, PA
A. Holm (7)	Space Telescope Science Institute, MD
K. Horne	Space Telescope Science Institute, MD
S. Howell	Planetary Science Institute, AZ
D. Huenemoerder	NASA HQ, Washington DC
D. Jones	Royal Greenwich Observatory, England
D. Kaiser (4)	Columbus, IN
J. Kaler	University of Illinois, IL
J. Kanipe	<i>Star Date</i> Magazine, TX
S. Karahaliloglu	Ege University, Turkey
M. Karovska (8)	Harvard-Smithsonian Center for Astrophysics, MA
T. Katauskas	International Space Year, Washington, DC
S. Kenyon	Harvard-Smithsonian Center for Astrophysics, MA

Table 4. Individuals Requesting AAVSO Data During Fiscal Year 1990 - 1991

<i>Name</i>	<i>Affiliation</i>
R. Khan	Malda, India
R. King	Duluth, MN
D. Knipple	St. Vincent College, PA
J. Knowles	Barrington, NH
A. Kucinskis	Vilnius, Lithuania
W. Lewin	Massachusetts Institute of Technology, MA
W. Liller	Vina del Mar, Chile
J. Lockwood	Sahuaro High School, AZ
A. MacRobert (3)	<i>Sky &amp; Telescope</i> Magazine, MA
A. Magalhaes (2)	University of Wisconsin, WI
S. Maran	NASA-Goddard Space Flight Center, MD
B. Marksworth	Sahuaro High School, AZ
B. Marsden (9)	Harvard-Smithsonian Center for Astrophysics, MA
K. Mason (5)	University College London, England
M. Mattei	MIT, Lincoln Laboratory, MA
C. Mauche (2)	Lawrence Livermore National Laboratories, CA
M. Mennessier (6)	University of Montpellier, France
A. Monheim	Pittsburgh, PA
B. Montesinos	Oxford University, England
K. Mukai (4)	University of California at Berkeley, CA
H. Nussbaumer	ETH Zurich, Institute of Astronomy, Switzerland
T. Ozkan	Istanbul Universitesi, Turkey
F. Paresce (2)	Space Telescope Science Institute, MD
J. Pasachoff (2)	Williams College, MA
J. Patterson (2)	Columbia University, NY
J. Percy (3)	University of Toronto, Canada
O. Piechowski	Lansing, MI
A. Pop	Astronomical Observatory, Romania
C. Predom	New Haven, CT
A. Quirrenbach	US Naval Observatory, Washington, DC
G. Rego	Montevideo, Uruguay
F. Ringwald (4)	Dartmouth College, NH
S. Rowell	<i>Atlanta Journal Constitution</i> , GA
T. Saygac	Istanbul Universitesi, Turkey
P. Schmeer	Saarbrücken, Germany
C. Scovil	Stamford, CT
B. Serridge	Greer, SC
A. Shafter	San Diego State University, CA
E. Sion	Space Telescope Science Institute, MD
M. Soukup (3)	Los Alamos National Laboratory, NM
B. Stecklum	Astrophysikalisches Institut und Universitäts Sternwarte, Germany
A. Stewart	Boston, MA
F. Sullivan	NASA HQ, Washington, DC
P. Sventek (2)	Houston, TX
P. Sygula	Sahuaro High School, AZ
P. Szkody	University of Washington, WA
C. Townes (2)	University of California at Berkeley, CA
R. Tse	Sahuaro High School, AZ

Table 4. Individuals Requesting AAVSO Data During Fiscal Year 1990 - 1991

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<i>Name</i>	<i>Affiliation</i>
F. Verbunt	Astronomical Institute, Netherlands
G. Wallerstein (4)	University of Washington, WA
R. White	University of Arizona, AZ
J. Whyde	Sahuaro High School, AZ
L. Willson (2)	Iowa State University, IA
J. Woods	University of Sussex, England
F. Wright (2)	Pasadena, CA
I. Wright	Virginia Beach, VA
D. Zehner	Dallas Public Library, OR

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

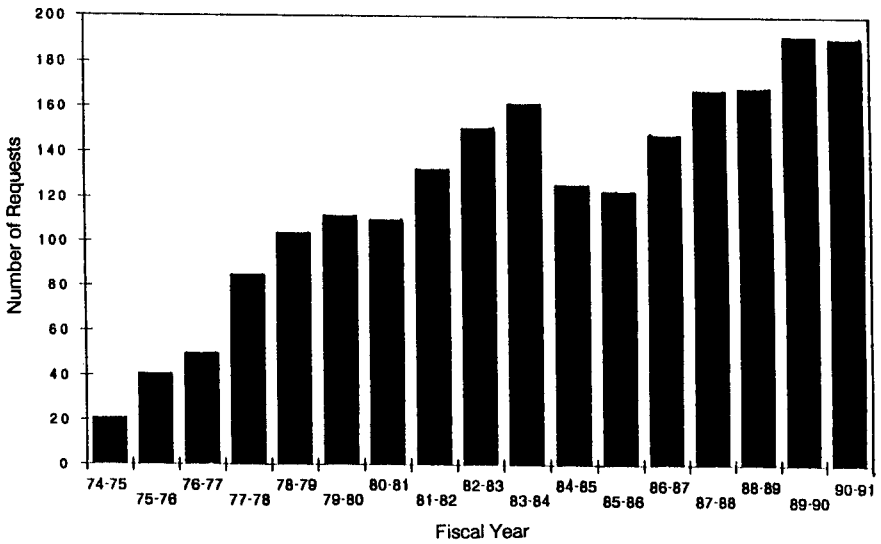


Figure 1. Number of requests for AAVSO data filled each year since 1974.

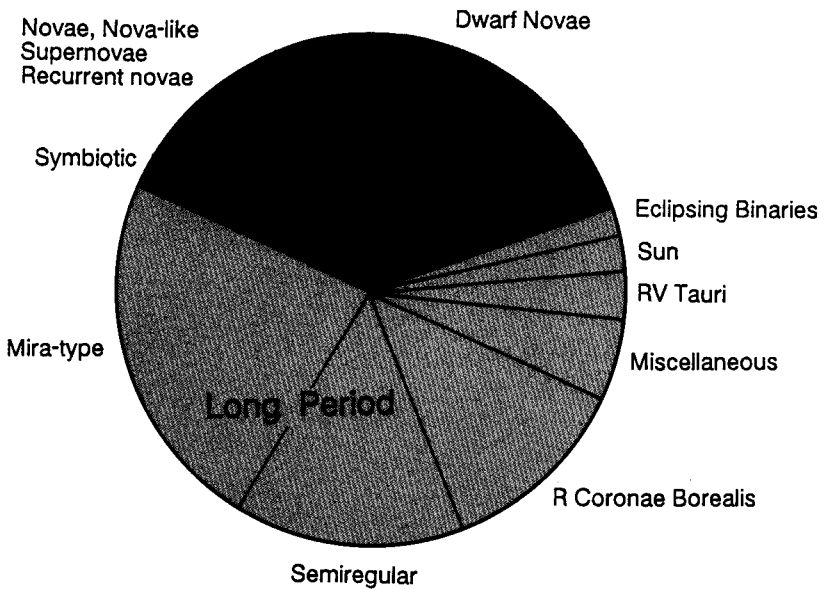


Figure 2. Types of variable stars for which AAVSO data were requested in 1990-91.

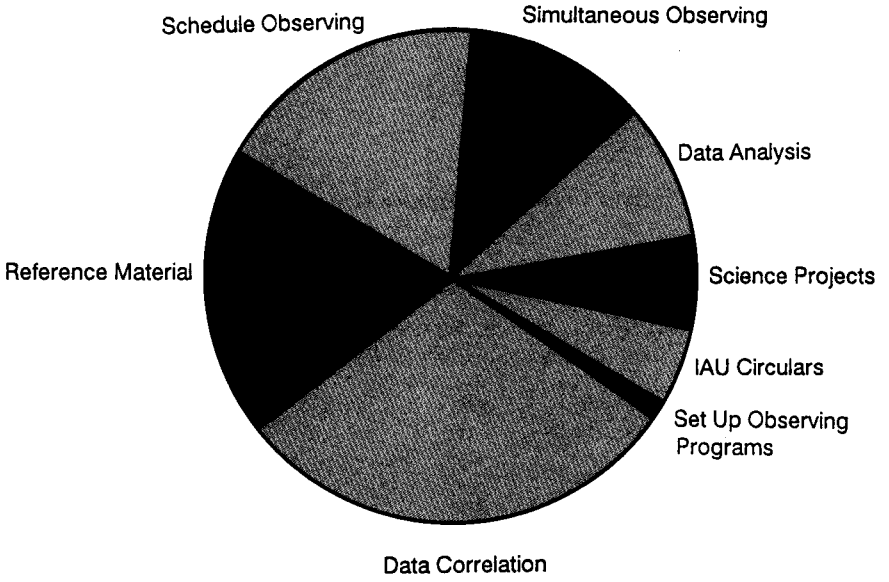


Figure 3. Areas in which AAVSO data and services were used in 1990-91.