# ANNUAL REPORT OF THE DIRECTOR

#### FOR FISCAL YEAR 1982-1983

It is my privilege to present to you my tenth annual report, for the fiscal year 1982-1983. In my report I wish to address major areas of our activities. I would like to take your thoughts through ten years to help you visualize where we have been, where we are today, and where we may be heading in the future.

### DATA PROCESSING

Ten years ago there was no such object as a personal computer, certainly not in the the AAVSO Headquarters. We were using computer cards to enter and verify our data on an IBM key punch machine and a verifier. We were making our data from the 1960's machine readable on computer cards with no back-up on magnetic tape. Observations coming in each month were plotted directly from the monthly reports onto the "running light curves" of each star.

We surveyed our data processing operation, our urgent needs, and our resources, and we decided to prioritize the computerization of the data coming in each month. This would allow us to disseminate our current data to the astronomical community more easily.

Once we were able to computerize and process the incoming monthly data, we went back to computerize the data from the 1960's so that our data from 1960 to the present would be in machine readable form. Along with this activity we developed computer programs to check, sort, merge, and plot data.

We then transferred all the observations on computer cards (some 1.5 million) onto magnetic tapes and made several copies of these tapes to be stored at various locations for safety.

Five years ago we converted all our computer programs and data files from Control Data to a Digital System when the computer facilities that we have been using at the Harvard-Smithsonian Center For Astrophysics upgraded their computers to Digital Vax computers. We developed more computer programs to increase the efficiency of our data processing.

We started to computerize and make machine readable our archival data published from 1911 to 1960. Our data cards began to occupy most of the office space, as well as presenting enormous difficulties in processing them via the very small card reader of the Vax computer. We purchased our own microcomputer system which used diskettes as the medium to enter data and which was compatible with the Vax Computer at the Center For Astrophysics.

We trained our staff in using our in-house computers, and developed still more computer programs to aid us in our operations. This is where we are now in terms of our data processing:

- Processing Current Data: We are up to date in entering and processing the 15,000 to 20,000 observations received each month.
- 2. Processing Archival Data Published from 1911 to 1960: This project, which was temporarily halted, is now in progress again. The members of the Royal Astronomical Society of New Zealand, Variable Star Section, sent their archival data to be added to our files to make the data on each star more complete.

3. <u>Publication of Data: AAVSO Report 38</u>, observations of long period variables from 1974 to 1977, was published most cost-effectively this year. This publication, which contains for the first time computer-plotted light curves of individual observations of 490 stars, has been received very favorably by our members, observers, and the astronomical community.

AAVSO Reports 39 and 41, observations of other types of variables, have been prepared. They need final checking and plotting. Report 40, the continuation of Report 38, is in the same state.

Long term data on long period variables is extremely important in providing information about the behavior, pulsation modes, slow evolution, and changes in the interior structure of these stars. They also provide an important galactic data base for comparison with long period variables in other galaxies.

Maxima and Minima of Long Period Variables from 1950 to 1975: compilation of maxima and minima dates and magnitudes for 383 long period variables from 1950 to 1975 has been completed. This is the continuation of the Studies of Long Period Variables published in 1956. We have received a grant from the Small Research Program of the American Astronomical Society to print this work.

Maxima and Minima of Long Period Variables from 1975 to 1980: Compilation of these data has also been completed, thanks to the volunteer help of Mrs. Katherine Hazen. The information will be published after final checking.

### SPECIAL REQUESTS

AAVSO was founded in 1911 for the purpose of making the observations of amateur astronomers available to professional  $% \left( 1\right) =\left\{ 1\right\}$ astronomers. This has been our main goal. During the last decade, as astronomers have stretched their research to both shorter and longer wavelengths of the electromagnetic spectrum, AAVSO optical data have become increasingly important in understanding the behavior of variable stars. Each year we receive an increasing number of requests from astronomers. We have supplied AAVSO data for 822 requests in the past 10 years. 602 of these were in the past five years. Figure 1 is a graph of the number of special requests filled each year since 1974.

This year alone we have supplied data for a record high number of 151 requests received from astronomers and students throughout the United States as well as abroad. The list below and also Figure 2 show the types of variable stars for which data were requested.

- Cataclysmic variables dwarf novae (32%), novae and recurrent novae (9%)
- 2. Long Period variables (18%)
- 3. Semiregular variables (11%)
  - Symbiotic stars Z And type (8%)
- R Coronae Borealis stars (3%)
- RV Tauri stars (1%)
- 7. Eclipsing binaries (2%)
- Cepheids, quasars, and BL Lacertae stars (3%)
   The Sun (4%)
- The Sun (4%)
- 10.
- Nebular variables (1%) General requests on variables (8%) 11.

A list of the names of individuals making requests, with their affiliation and location, is given at the end of my report.

have categorized below and shown in Figure 3 the various areas in which AAVSO data and services have been used.

- 1. Data correlation (24%): AAVSO data have been used to correlate a) spectroscopic and photometric data obtained with special instruments on large telescopes; b) x-ray, ultraviolet, and infrared data obtained with instruments aboard spacecraft such as the European X-ray Observatory Satellite (EXOSAT), International Ultraviolet Explorer (IUE), and Infrared Astronomical Satellite (IRAS); and c) data in the radio wavelengths obtained with radio telescopes.
- 2. Simultaneous observing (15%): Participation of AAVSO observers in the simultaneous observation and notification of stellar activity during observing runs of astronomers in the optical, infrared, radio, x-ray, and ultraviolet wavelengths, with instruments both ground-based and aboard spacecraft.
- 3. Data analysis (13%): AAVSO data have been used in the analysis of long period, semiregular, symbiotic, dwarf novae, recurrent novae, and R Coronae Borealis stars.
- 4. Scheduling observing runs (13%): We have provided information, particularly on long period and semiregular variables and dwarf novae, to assist astronomers in scheduling ground-based and aboard-spacecraft observing runs.
- 5. Reference material (13%): We have provided information, light curves, and finding charts, to be used as reference materials for articles in astronomical magazines and books.
- 6. Science projects (11%): We have provided information, light curves, finding charts, and guidance to students involved in science projects on variable stars and the Sun for their science classes and science fairs. For his science project on variable stars, D. F. Figer of Wickliffe, Ohio, won first prize at the State Science Day of Ohio.
- 7. Setting up special observing programs (3%): We have provided information and guidance to set up observing programs on variable stars in high schools and universities in the United States, England, and Indonesia.

The 1901 nova, GK Persei, was observed at various wavelengths during its minor outburst, thanks to the immediate notification of its activity from our observers, especially John Bortle. For the first time, short period, 350-second oscillations were observed from an old nova in the x-ray with EXOSAT.

TY Piscium, a dwarf nova suspected to be of SU UMa type from its optical behavior, was observed during its superoutburst (which we predicted) with a high-speed photometer by Dr. Edward Kemper at Louisiana State University. The finding of superhumps, with a period of about 101 seconds, confirmed that TY Piscium is indeed an SU UMa type dwarf nova.

AAVSO provided the only optical data for SU UMa during the observing run in which three satellites - EXOSAT, IUE, and IRAS - observing simultaneously for the first time monitored this dwarf nova. All professional observatories scheduled to observe it photometrically were clouded out.

AAVSO contributions to research in variable stars continue to be acknowledged in professional articles either published or about to be published in the astronomical literature. A few of these articles are listed below:

Blair, W. et al. "Spectroscopic Observations of Symbiotic Stars and Related Objects." Preprint. Bode, M. et al. "Infrared Photometry and Spectroscopy of Nova Aquilae 1982." Preprint.

Clark, F. et al. 1982, "Polarization Properties of the 86 GHZ SiO Maser Emission from R Cassiopeiae." <u>Astrophysical</u> Journal 260, 569: 1982.

AAVSO observations have been published covering 19 astronomical events in the <u>IAU Circulars</u> of the Central Bureau for Astronomical Telegrams.

Thus, AAVSO data - your observations - are crucial to variable star research and are being used extensively by the astronomical community worldwide.

### SUMMARY OF OBSERVATIONS

This year weather conditions in the USA were again unfavorable for observing. Many longtime observers who have been observing and reporting observations every month could not maintain their records. Despite this, we received a record high number of observations for the year, thanks to the efforts of our observers abroad.

Figure 4 is a graph of the observations received at HQ each year since 1974. The contributions of the observers in the United States and abroad are indicated for each year. This year, for the first time, the number of observations from abroad is larger than that from the United States. Figure 5 is a graph of the number of observers and observations for each year.

During the fiscal year 1982-1983, we received 194,580 observations from 505 observers. These totals include 88,167 observations from 256 observers in 40 states of the United States, and 106,413 observations from 248 observers in 28 countries, including 24,561 observations from the French variable star observers of AFOEV, 11,742 observations from Canadian observers, and 10,771 observations from observers in South Africa. These totals also include the 83 adjusted observations of Orion variables, where ten observations are counted as one.

The grand total of observations recorded since the founding of AAVSO in 1911 is 4,983,981.

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

25 observers reported between 1000 and 2000 observations, 13 between 2000 and 3000, 8 between 3000 and 4000, and 2 between 4000 and 5000 observations. Michel Verdenet sent in 6362 observations, Wayne Lowder 6602, and Danie Overbeek 8080.

Mark Heifner leads the inner sanctum observations with 1668 estimates, followed by Ernst Mayer with 1479, John Bortle with 1292, and Glenn Chaple with 1059 estimates.

Charles Bordner, Bob Donahue, Chris Heseltine, and Howard Landis sent in observations obtained with a photoelectric photometer. Drs. Martha Hazen-Liller and Richard Stanton provided photoelectric estimates for comparison stars in several variable star fields.

My sincere thanks to each of our untiring, enthusiastic, and devoted observers for their astronomical contributions. Each observer's observations, whether one or hundreds, are very much appreciated and valued. My special thanks to those observers who, additionally, have participated in simultaneous observing runs to aid astronomers requesting this assistance, and to those observers who alert me by phone and mail to the unusual behavior of stars before the regular monthly report forms are sent. These special services have helped astronomers immensely in obtaining valuable data on variable stars.

### INTERNATIONAL COOPERATION

Our cooperation continues with major variable star groups around the world.

Members of the following variable star associations sent in observations to the AAVSO, either individually or as a group, for inclusion in our data files for processing and publication: Association Française des Observateurs d'Étoiles Variables (France); Astronomical Society of Southern Africa, Variable Star Section; Astronomischer Jugendclub (Austria); Berliner Arbeitsgemeinschaft für Veränderliche Sterne (West Germany); British Astronomical Association, Variable Star Section (England); British Astronomical Association of New South Wales (Australia); Japan Astronomical Study Association; Nederlandse Vereniging Voor Weeren Sterrenkunde, Werkgroep Veranderlijke Sterren (Netherlands); Norsk Astronomisk Selskap, Variable Stjernegruppen (Norway); Planetario e Observatorio Astronomico do Colegio Estadual do Parana (Brazil); Pleione Valtozocsillag-eszlelo Halozat (Hungary); Royal Astronomical Society of Canada; Uniao Brasileira de Astronomia, Variable Star Commission (Brazil); Vereniging Voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium).

Dr. Frank Bateson, Director of the Variable Star Section of the Royal Astronomical Society of New Zealand, sends the observations of their members for preparation of the AAVSO Bulletins, which give the maxima and minima dates of long period variables. In turn, Dr. Bateson disseminates AAVSO predicted dates to his observers. Dr. Bateson has also been sending the archival data of the Variable Star Section of the Royal Astronomical Society of New Zealand to be included in our archival data files. Last year the British Astronomical Association and the Amateur Astronomical Society of Scandinavia also disseminated the data in the AAVSO Bulletin to their observers.

We continue to exchange literature with major universities, observatories, and astronomical groups around the world.

# MEETINGS ATTENDED AND TALKS GIVEN ON THE AAVSO

I attended the 161st Meeting of the American Astronomical Society held in Boston last January, and presented a poster paper on the supermaxima of SU Ursae Majoris stars. Following this meeting, the 7th Annual North American Workshop on Cataclysmic Variables was held at the Harvard-Smithsonian Center for Astrophysics, Cambridge, MA. We assisted in the organizing and hosting of this Workshop and had a three-day open house at Headquarters. Many astronomers took advantage of this opportunity to become familiar with our operation and our data base.

I gave talks on the AAVSO and variable stars to the following groups this past year: the Science Fiction Convention, Boston; Burlington High School 7th, 8th, 9th grade science classes; Philips Academy Astronomy Club, Andover, MA; and the Astronomy Class at Massachusetts Institute of Technology.

### REQUESTS FOR INFORMATION ON THE AAVSO AND MEMBERSHIP

We have received 400 requests this year for information on the AAVSO from individuals, astronomy clubs, schools, magazines, and book publishers. One of our members who attended the Riverside Convention in California distributed information on the AAVSO, and we have several new members from that meeting.

126 new members were elected this year. Of these, 124 joined as annual members and 2 as sustaining. In addition, 18 members changed membership from annual to sustaining and one person was reinstated as an AAVSO member.

#### COMMUNICATIONS

We receive a very large number of letters that usually request specific information. This past year we have answered 750 individual letters, not including short notes, form letters, and general letters to members. We are working very hard at handling correspondence and one method has been to prioritize it. The addition of an administrative assistant, Janet MacLennan, to our staff has made a big difference in managing the correspondence.

A recent letter we received from one of our new members has given us hope. The letter reads:

"I have enjoyed being a member of the AAVSO for nearly a year now and I just wanted to take a moment out to thank you and your staff for the excellent aids and ears you provide to amateur astronomers like myself in our variable star observations. I have especially appreciated the prompt replies given to my questions this past year about specific stars. With this in mind and in the spirit of good humor I thought I'd send along a couple of dubious astronomical limericks I'd been working on of late. As you process the mass of figures in the September reports I hope these will give you a little chuckle. Thanks again.

For whom a telescope is carriable We commend a program of variables Flashing on and off nightly They take our time rightly That some even thinketh them marriageable.

There was an astronomer named Bauer Who smelled as sweet as a flower 'Every morning,' he'd admit, 'I'd stay up until six and bathe in a meteor shower.'"

In order to aid communications, we have purchased a telephone answering machine for Headquarters. Members can now call in observations or leave messages after Headquarters office hours and on weekends. There is no limit on the message length (up to one-half hour) and I can call in from my home and listen to messages left on the machine. Several of our members who have been using the answering machine have been pleased with how reasonable and convenient it is. We urge more members to make use of this service.

### **PUBLICATIONS**

The following have been published by the AAVSO this year:

The Journal of the AAVSO, Volume 11, Nos. 1 and 2; Volume 12, No.

l, edited by Charles A. Whitney, with assistance from Elizabeth O. Waagen and Janet C. MacLennan.

AAVSO Bulletin 46: Predicted Maxima and Minima Dates of Long Period Variables for 1983, prepared by Janet Akyüz Mattei.

AAVSO Bulletin 46 Supplement: Schematic representation of the data in AAVSO Bulletin 46, compiled by Peter O. Taylor and Josefa M. Manella.

AAVSO Circular, Numbers 144 to 155, edited by John E. Bortle and Charles E. Scovil.

AAVSO Alert Notices, Numbers 49 to 58, prepared by Janet Akyüz Mattei.

AAVSO Solar Bulletin, Volume 38, Numbers 8 to 12, edited by Robert B. Ammons, with assistance from Stephanie Ammons and Peter O. Taylor.

Ephemerides of Eclipsing Binary and RR Lyrae Stars for 1983, prepared by Peter O. Taylor and Josefa M. Manella, with Marvin E. Baldwin.

AAVSO Photoelectric Photometry Newsletter, Volume 3, Numbers 3 and 4, edited by Russell M. Genet; Volume 4, Number 1, edited by John R. Percy.

Predicted maxima dates of long period variables for 1984 and an ephemeris of a few easy-to-observe Cepheids, RR Lyrae Stars, and Eclipsing Binaries, as well as a set of information on the AAVSO Photoelectric Photometry Program, prepared by Janet Akyüz Mattei, were all published in the Observer's Handbook 1984 of the Royal Astronomical Society of Canada.

Predicted maxima dates of bright long period variables, prepared by Janet Akyüz Mattei, were published monthly in <u>Sky & Telescope</u>.

The contribution of the following members' time and abilities toward AAVSO publications is gratefully acknowledged:

Robert B. Ammons, Stephanie Ammons, Marvin E. Baldwin, John E. Bortle, Russell M. Genet, Janet C. MacLennan, Josefa M. Manella, John R. Percy, Charles E. Scovil, Peter O. Taylor, Elizabeth O. Waagen, Charles A. Whitney, and the Editorial Board of the <u>JAAVSO</u>.

#### EDUCATIONAL PROGRAMS

The Venture Program, in which several universities participate, offers opportunities to students taking one to two semesters off from college. This Program has provided us with a student from Northwestern University, Eric Schwartz, a mathematics major with computer programming experience. He will be spending six months at AAVSO Headquarters to customize and revise some of our computer programs.

Margarita Tapia has been working as a Margaret W. Mayall Assistant. Her major work is to plot the observational data, and she also assists in other office activities.

We helped several high school students with their science fair projects on variable stars and the Sun. One student from Leesburg, Florida, wrote:

"The information you sent was most helpful as well as interesting. I thought you might be interested to know that I have not only won

first place in the high school science fair but that I have won first place in the county-wide fair in earth and space science."

Another student from Wickliffe, Ohio, wrote:

"I would like to thank the organization for supplying the information for my variable star project. The project was presented at District Science Day and State Science Day of Ohio." In both of these events this student won first prize.

We helped set up a complete observing program on variable stars and the Sun for the IAU-sponsored "School for Young Astronomers" project in Java, Indonesia.

### PERSONNEL AT HEADOUARTERS

Our recent accomplishments are due to the very hard working, conscientious, and capable Headquarters staff. We work as a team and our goal is to accomplish the business of the association in the most efficient way possible. My sincere and special thanks to my technical assistant Elizabeth O. Waagen, our administrative assistant and correspondence secretary Janet C. MacLennan, our special research assistant Shelly K. Pope (now a graduate student at the University of Arizona), our secretary Dorothy Haviland, our data entry operators Barbara Silva and Bethune Kelly, our general assistant Margarita Tapia, our Venture Program student Eric Schwartz, and our volunteer assistant Katherine Hazen.

### **ACKNOWLEDGEMENTS**

Our special thanks go to the Harvard-Smithsonian Center for Astrophysics (CFA) for their financial support in the form of a computer grant. We use the CFA's computer to process our large volume of data, and to prepare these data for publication. We thank Prof. Owen Gingerich for making this grant possible. Special thanks to Barbara Welther for her suggestions and help with data processing and computer funding at the CFA and for her assistance with our Annual meeting in Nantucket. We also extend thanks to the new Director of the CFA, Dr. Irwin Shapiro, for his support of AAVSO's use of the CFA's computer, and to Dr. James Conklin, Director of the CFA Computation Facility, for his assistance with our computer needs.

We most gratefully acknowledge the continuing financial support of Dr. Clinton B. Ford in computerizing the archival data and in the printing of  $\underline{AAVSO}$  Report 38.

We thank the Central Florida Astronomical Society for their contribution through the Fernald Memorial Fund to the printing of <u>AAVSO</u> Report 38.

We acknowledge with thanks the grant from the National Aeronautics and Space Administration (NASA) to disseminate and to publish our data on some cataclysmic variables.

We very much appreciate the grant from the National Science Foundation (NSF) to process and to make machine-readable all our data from 1966 to 1979, and to prepare more recent data for publication.

We thank the National Oceanic and Atmospheric Administration (NOAA) for the financial support of the activities of our Solar Division.

We are grateful for the grant from the Small Research Program of

the American Astronomical Society to publish the data on maxima and minima of long period variables from 1950 to 1975.

We remember our members Cy and Emily Fernald with fond memories and acknowledge their continued support of the association through the trust fund bequeathed to the AAVSO.

We thank the Stamford Museum and Nature Center for making available to Charles Scovil the facilities of Stamford Observatory for the preparation of new charts and the <u>AAVSO Circular</u>, and the 22-inch telescope for the observations of variable stars and special observing programs.

Our special thanks to Mrs. Katherine Hazen for volunteering her time to help with our data analysis and Headquarters operations.

Our thanks to our member Keith Danskin for his help at Headquarters.

Our special thanks to members who have taken Sustaining Membership, thus increasing their financial support of the association, and to members who have made financial contributions to the General Fund, the Margaret W. Mayall Assistantship Fund, and/or the Endowment Fund.

I personally thank my husband for his support and encouragement.

My special thanks to our Committee Chairmen, Officers, and Council Members for their contributions of wisdom and time to the efficient operation of the association.

In closing, I would like to thank each of you for your support and for your valuable contributions throughout my ten years of directorship. I hope I have gained your confidence and trust. I would like to believe that I have represented the AAVSO well to the astronomical community. I have attempted to make the astronomical community more aware of the "treasures" of the AAVSO - the data you provide. This has been and will continue to be my main goal.

Respectfully submitted,

Janet Akyüz Mattei Director

TABLE I
Observer Totals by Country

Country	No.of Obs.	Total	Country	No.of Obs.	Total
Argentina Australia	3 2	3423 1995	Hungary Italy	66 18	10612 4630
Austria	3	119	Japan	5	2152
Belgium	10	4414	Netherlands	14	8622
Brazil	3	70	Norway	6	3787
Canada	21	11742	Poland	2	668
Chile	1	91	Romania	1	691
Czechoslovakia	. 1	274	South Africa	10	10771
Denmark	8	1403	Spain	1	15
England	9	5237	Sweden	1	7
Fed.Rep.German	y 10	5697	Switzerland	1	118
France	31	24561	U. S. A.	260	88167
German Dem. Re	p. 2	1437	Venezuela	1	119
Greece	3	1688	Yugoslavia	7	427
			Zimbabwe	5	1643
			TOTAL	505	194580

TABLE II

U. S. A. Observer Totals by State

State		No.of Obs.	Total Obs.	State		o.of	Total <u>Obs.</u>
Alabama	(AL)	3	817	Nebraska	(NE)	2	197
Arizona	(AZ)	6	1437	New Hampshire	(NH)	3	117
California	(CA)	28	3605	New Jersey	(NJ)	3	1010
Colorado	(CO)	7	9640	New Mexico	(NM)	1	37
Connecticut	(CT)	7	2437	New York	(NY) 2	26	17271
Florida	(FL)	10	4171	North Carolina	a (NC)	4	574
Georgia	(GA)	4	55	North Dakota	(ND)	2	91
Hawali	(HI)	2	95	Ohio	(OH) ]	.8	5279
Illinois	(IL)	16	5103	Oklahoma	(OK)	2	17
Indiana	(IN)	7	1706	Oregon	(OR)	2	4
Iowa	(IA)	3	24	Pennsylvania	(PA) I	.5	3123
Kansas	(KS)	2	2352	Rhode Island	(RI)	1	22
Louisiana	(LA)	5	3350	South Carolina	a(SC)	3	1283
Maine	(ME)	4	258	Tennessee	(TN)	2	55
Maryland	(MD)	1	377	Texas	(TX) ]	.8	4089
Massachusetts	(MA)	12	6047	Vermont	(VT)	1	78
Michigan	(MI)	6	1443	Virginia	(VA)	5	3412
Minnesota	(MN)	4	268	Washington	(WA)	2	632
Mississippi	(MS)	3	253	West Virginia	(WV)	1	1002
Missouri	(MO)	6	1600	Wisconsin	(WI)_]	.3	4836
				TOTAL	26	50	88167

# TABLE III

AAP A	. P. Abbott, Canada	413		RC	c	A Busens TT
AD R	. M. Adams, MA		179	BIIO	Δ.	A. Bucaro, IL 42 T. Bueno, CA 623
AB W	. Albrecht, HI	89-		BNZ	N.	Bulzacchelli, NY 15
ALS S	. Allmand, Wales	227		BGO	R.	Bunge, NY 226
ARO R	. J. R. Amorim, Brazi			BDP	D.	P. Burbank, MN 4
AUD U	. Andersen, Norway	8		BJU	J.	C. Buss, CA 180
A AWA A	. Andrews, AZ . B. Ariail, SC	7		BUS	R.	A. Buss, ND 37
ARN*I.	. Arnold, France	610-	88	BUL	T.	Butler, MO 228- 42
APL P	. L. Arthur, OH	654 12		CPA	Α.	Camponovo, Argentina 3401
AKT T	. Atkin, TX	198		CDA	.u.	A.S. Campos, S.Africa 124
ATW P	<ul> <li>Atwood, CT</li> </ul>	17		CUS	"D.	Candela, France 900 Caruso, OH 1
AUB*M	. Aubaud, France	271		CIT	M.	0
ADE D	. E. Aucoin, Jr., ME	39		CJZ	J.	Cerar, Yugoslavia 55
BTR T	• R. Baker, WI	5-	1	CGF	G.	F. Chaple, Jr., MA 4186-1050
BM M	. E. Baldwin, IN	287		CAU	Α.	Christian, Italy 125
DHM M	. Balogh, Hungary	. 6		CLK	W.	Clark, MO 235- 3
BWK W	. Barbin, PA . S. Barksdale, FL	42-	3	CKI	Ι.	Clarke, PA 105
BSR S	Baroni, Italy	712		CEW	E.	W. Clement, FL 4
BGT G	. A. Barros, Argentina	275-	T	CLO	Α.	Cole, FL 6
BSP"P	Bartos, Hungary	339		CMI	`J.	Colin, France 16
BSC~F	Bartus, Hungary	39		COL	D.	J. Collins, England 24 L. Collins, CA 38
BB R	. S. Bates. MA	215		CMG	Ġ.	Comello, Netherlands 1986- 312
BAU J	. Bauer, W. Germanv	45		COO	L.	M. Cook, CA 100
BAE A	. Beaman, IL	10-	2	CCL	c.	Cooper, LA 6
BBA B	. B. Beaman, IL	252-	39	COE	Ε.	Costa Linsdas, Brazil R
BEV E	J. Beaman, IL	2		CLX	L.	B. Cox, Canada 17
BKK K	E. Beaman, IL Beckmann, ME	13-	3	CR	T.	A. Cragg, Australia 1953- 493
BTY T.	Benner, PA	132		CKK	к.	E. Crumrine. NV 38
BBE~B	Berente, Hungary	17	200	DAN	J.	Danko, Hungary 21
BEG*M.	Berger, France	25		DAK DSI.	T.	H. Danskin, NH 63- 16
BSG G.	Berns, CA	1		DRF	F.	A. DaSilva L., Brazil 56 Deboosere, Belgium 212
BMD M.	R. Biesiada, Poland	32		DES	s.	Deceuninck, Belgium 212 Deceuninck, Belgium 1040
BIL G.	A. Bilodeau. CA	70-	39	DRS	Ř.	S. Demchyshyn, Canada 67
BIK*G.	Birioukoff, France	8		DEX	J.	A. DeYoung. VA A
BEN A.	Birkner, IL	36		תסח	D	D Diate 00
BCB W	Biro, Hungary Blagg, TX	3		DIL	W.	G. Dillon, TX 147 Dixon, NY 260- 2
BLD D.	L. Blane, S. Africa	186 22		DRX	R.	Dixon, NY 260- 2
BOH D.		1286		טטט		Docci, Italy 74
BFK&F.	Boinck, Netherlands	6		DDI.	D.	Dolzan, Yugoslavia 143 L. Dombrowski, CT 108- 2
BNC C.	Bordner, CO	110-	2	GDB~	ē.	
BMW M.	W. Borgman, PA	225		DAG	Α.	Dredge, S. Africa 92
BRJ Jo	hn E. Bortle, NY	3762-1	292	DMO*	М.	Dumont, France 151
BUT JO	sebu E. Boltle, MX	43		DGP	G.	P. Dyck, MA 4- 2
BPC P	J. Bouma, Netherlands			ECH*	Α.	R. Echeverria, France 188
RAD D	J. Bourgeois, TX A. Bradley, LA	,11		ECJ .	J.	H. Eckendorf. AZ 240- 26
BLX I	Bragg, GA	171- 3	50	ECK	ç.	Eckert, W. Germany 174
BDT D.		1773		EL .	J.	E. Ellerbe, Spain 15
BTB T.	C. Bretl, KS	51-	12	FRW 1	٥. W	A. Falvo, NY 12- 1 B. Farrar Jr., NM 37- 3
BMI M.	R. Brewster, TX	27		FCA (	Ċ.	
BHN&H.	Bril, Netherlands	284		FJH&	Н.	Feijth, Netherlands 2764- 501
BBS W.	F. Broussard, TX	3		FDF 1	٥.	F. Figer, OH 186
BBM B.	M. Brown, NY	166		FKT :	г.	Fike, IL 7
BUA*A.	Bruno, France	200		FLT 1	R. 1	W. Fleet, Zimbahwa 200_ 11
DID K.	Bryden, Canada	/89- :	231	FEM 1	Ξ. :	M. Flynn, MO 74- 1

	Fodor, Hungary	23	HFE~F.	Horvath, Hungary	10	
FD C.	B. Ford, CT	208- 96	HOI~I.	Horvath, Hungary	59	
FOJ J.	Formo, WI	7		Hoste, Belgium	587-	2
	Fors, Denmark	20		S. Houston, CT	1	
FT G.	Fortier, Canada	248- 27		Hubbard, MA	4	
	K. Frank, OK	6		Hudgens, MS	3	
FRO R.	A. Freeman, CO	84		A. Hudson, CA	213	
	Frosina, Italy	6		J. Hullett, TX	93	
	C. Fugman, WI	62		J. Hurless, OH	703-	70
	C. Gale, IA	3	HIID C	M. Hurst, England	539-	78
GIS I.	L. Garrison, PA	6				18
GAZ*J.	P. Garsztka, France	250	TDm~m	Ipolyi, Hungary	3	
	Gaskill, TX	71	TET I.	Ipolyi, Hungary	3	
	Geenan, Netherlands	62		Jacobs, WI	154	
	Gerber, W. Germany	301		Jahn, W. Germany	2	
	Giuliani, Italy			A. James, WI	716	
		27		T. Jeffrey, CA	245-	54
	R. Glenn, NY	263		K. Jensen, Denmark	4	
	H. Glenn, NY	264		Jergler, Hungary	4	
	F. Goff, CA			E. Johnson, MD	377-	9
	Gombos, Hungary	62	KPV P.	Kaiba, Yugoslavia	16	
	N. Goodwin, LA	2825- 401	KJA J.	A. Kalata, IL	9	
	A. Graham, IL	170		Karaszi, Hungary	23	
	H. Granslo, Norway	3280- 34	KDC D.	Karli, Yugoslavia	21	
	H. Grant, SC	58	KLY G.	W. Kelley, Jr., VA	223-	92
	Gregory, France	12	KSZ~S.	Kesztheli, Hungary	75	
GRI J.	W. Griese, III, CT	492- 289	KRB R.	P. King, MN	174-	37
	Grove, MI	178	KBS B.	Klaas, W. Germany	48	•
GML M.	Grunanger, Austria	80		Klinting, Denmark	188-	1
	Grunnet, Denmark	380		W. Kneipp, LA	225-	16
GRZ H.	Grzelczyk, W. Germany	1487- 123	KJI J.	Knell. TX	35	10
GCO C.	Gualdoni, Italy	143- 1	K.TW .T.	W. Knight, ME	3	
	Gugumus, France	305		P. Knight, ME	84	
	Gunther, France	2923	KGL J.	H. Knowles, MA	33	
	Gyarmati, Hungary	4	KOC~A	Noccia Hungary		
	Hadhazi, Hungary	21	RUC A.	Kocsis, Hungary	172	
	A. Halbach, CO		MIC C	F. Koehler, AZ	820	
	Ham, CO	3633- 114 1526- 5	VIG G.	KONI, AZ	20	
		1320- 3		Kohl, Switzerland	118	
	Hanon, France	86		Kole, Netherlands	68	
	T. Hansen, CA	2		J. Koller, Canada	69	
	Harles, ND			S. Kolman, IL	1248-	233
	Harrington, NY	22		A. Komorous, Canada		
	P. Harvan, MO	84		Kosa-Kiss, Romania	691	
HSB W.	Hasubick, W. Germany	7 891	KOA M.	Koshiro, Japan	376-	2
	Hazel, NY	1319- 372	KVS~A.	Kovacs, Hungary	32	
	S. Heasley, PA	14	KVI~I.	Kovacs, Hungary	539	
	Hegedus, Hungary	91		Krisch, W. Germany	879	
HEF M.	A. Heifner, CO	4223-1668	KRK K.	L. Krisciunas, HI	6	
HEN~C.	Henshaw, England	252	KRU J.	Kruta, Czechoslovakia	274	
HJN J.	Hers, S. Africa	1451- 547	KPG&G.	Kuipers, Netherlands	2028-	187
HES C.	Hesseltine, WI	26	KUR R.	Kuplinski, Jr., PA	37	
	Hevesi, Hungary	67		F. Kurtz, Hungary	26	
	L. Hiett, VA	2561		Kutnjak, Yugoslavia	159	
	T. Higgs, Zimbabwe			Lambert, TX	88	
	E. Hill, AZ			W. Langhans, CA	443-	7.04
	Hirasawa, Japan			LaPerna, Italy	83	T U 4
	G. Hodgson, IA	7		M. Laskowski, IN		
	Holl, Hungary	í	T.ATT T	rated NP	53	
	Honda, Japan			Latzel, NE	155	
				Lazuka, IL	173	
DUT U.	Horowitz, TX	36	TKD D.	C. Leake, IL	160	

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LEB*R. Lebert, France 48
LTF T. Leifsen, Norway 162
LZS*S. Lengyel, Hungary 1
LLR*G. Letellier, France 119
LEV A. J. LeVeque, CA 31
LEF F. N. Ley, Greece 163
LIW W. Liller, Chile 91
                                                       MDE D. R. Monger, FL 259
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AAVSO OBSERVERS 1982 - 1983

RKE*K. Ratz, Hungary 1800 SPC N. G. Spryn, PA 27
RAV*G. Ravet, France 30 SPR R. H. Stanton, CA 313-257
RRE R. E. Reaves, CA 11 SKS T. K. Steckner, Canada 450-21
RRE R. E. Reaves, CA 11 SKS T. K. Steckner, Canada 450-21
REH D. Rehner, OH 10 SGP P. Stegmann, NJ 107
REI*K.Reichenbacher, E. Germanyl51
SEY*R. Stehly, France 5
REP P. Reinhard, Austria 11 SKS T. K. Steckner, Canada 5
RNT C. C. Reinhart, OH 15
SY*R. Stehly, France 5
REP P. Reinhard, Austria 11 SKS T. Stehly, France 5
REN P. Renault, France 279
SWS R. S. Stewart, Canada 5
RNT C. C. Reinhart, OH 15
SYF G. Stephanopoulos, Greecel 437
RKF R. Robek, Yugoslavia 18
SWM N. Stritch, Yugoslavia 22
RKK R. Robek, Yugoslavia 11
SWM N. D. Sugarman, CA 40-19
RWS D. M. Roberts, MS Canada 604
SWN N. Stritch, Yugoslavia 22
RKK R. Robek, Nagara anada 604
RKA R. Robek, Mana Canada 604
RKA R. Robek, MA Canada 604
RKA R. Robek, Mana Canada 604
RKA R. Robek,
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# AAVSO OBSERVERS 1982 - 1983

VIA*J. Vialle, France	6362 560	1	WI D. WDJ D.	Whitten, TX B. Williams, IN J. Williams, TN E. Williams, OH	15 1230- 11 52 73
VIN J. V. Vincent, Zimbabwe WEO E. O. Waagen, MA	2	T		Wils, Belgium	1238- 113
	4				731- 1
WGJ G. J. Waffen, OH	_			A. Wilson, MO	
WMJ&J.Warmerdam, Netherland:	335		WSN T.	W. Wilson, WV	1002- 303
WWA W. A. Washburn, GA	36		WWM W.	M. Wilson, TN	3
WBB W. V. Webb, OH	239		WTO T.	Wojtecki, OH	3
WER R. J. Weber, KS	2301-	934	WCL C.	L. Womack, TX	761
WCB C. B. Webster, PA	212-	1	YON R.	R. Young, PA	70
WEI D. D. Weier, WI	988-	234	ZAF J.	Zaffi, Venezuela	119
WC R. Wend, IL	170-	2	ZGZ~G.	Zajacz, Hungary	571
WEF F. R. West, AL	773		ZLT~T.	Zalezsak, Hungary	447
WTJ J. E. West, TX	296		ZJJ J.	J. Zamichiei, Argent	ina ll
WYT T. Weyenberg, WI	13			Zanotta, Italy	336
			ZAL~L.	Zavodi, Hungary	7

- also member of Association Française des Observateurs d'Étoiles Variable (AFOEV).
- also member of Pleione Valtozocsillag-eszlelo Halozat (Hungary). also member of Nederlandse Vereniging Voor Weeren Sterrenkunde, Werkgroep Veranderlijke Sterren (NVVWS, WVS).

# Table IV

# List of Individuals Requesting AAVSO Data During Fiscal Year 1982-1983\*

	=111
Adams, S.	Illinois
Augason, G. C.	NASA Ames Research Center, CA
Beek, S.	Cornell University, NY
Berger, C.	Florida
Bernhard, W. E.	Canada
Birney, D. S.	Wellesley College, MA
Blair, W. P.	Harvard-Smithsonian Center for
	Astrophysics, MA
Bode, M. F.	Los Alamos National Laboratory, NM
Bode, M. F.	Los Alamos National Laboratory, NM
Bode, M. F.	Los Alamos National Laboratory, NM
	Los Alamos National Laboratory, NM
	Los Alamos National Laboratory, NM
	Los Alamos National Laboratory, NM
Bode, M. F.	Los Alamos National Laboratory, NM
Bode, M. F.	Los Alamos National Laboratory, NM
	Los Alamos National Laboratory, NM
	University of Toledo, OH
	England
	Malta
222	
	Astronomy magazine
,	California
Caldwell, M.	Alabama
Chen, P. C.	University of Texas
Clark, F.	University of Kentucky
Clarke, J. T.	University of California, Berkeley
Clarke, J. T.	University of California, Berkeley
Clarke, J. T.	University of California, Berkeley
Clarke, J. T.	University of California, Berkeley
Cohen, J.	California Institute of Technology

Cordova, F.	Mullard Laboratory, England
Cuypers, J.	Katholieko Univ. Touren Balaine
Dahari, O.	Katholieke Univ. Leuven, Belgium
Dalmeri, I.	Lick Observatory, CA
Dianna M	Italy
Dionne, M. Duschl, W. J.	Canada
Duschi, W. J.	Max-Planck Institut, West Germany
Eicher, D.	<u>Deep Sky</u> magazine
Eicher, D.	Deep Sky magazine
Eicher, D.	Deep Sky magazine
Eicher, D.	Deep Sky magazine
Espey, B.	Trinity College, Ireland
Espey, B. Figer, D. F.	Ohio
Figer, D. F.	Ohio
Folloni T F	
Folloni, J. E. Freeman, M.	Rhode Island
Priodium w	California
Friedjung, M.	Institut d'Astrophysique, France
Garcia, M.	Harvard-Smithsonian Center for
	Astrophysics, MA University of Wyoming
Gehrz, R. D.	University of Wyoming
Gierhart, C.	Virginia
Gierhart, C. Goodwin, J., Jr.	Massachusetts
Gravina, R.	
Hadley, D.	Observatoire de Lyon, France
Hauke, J.	University of Texas
Hock ?	New York
Heck, A.	Observatoire de Strasbourg, France
Henson, G.	University of Oregon
Hessman, G. V.	University of Texas
Hidayat, B.	Indonesia
	Maine
Hoeppe, G. R.	West Germany
HOLM, A.	NASA Goddard Space Flight Center, MD
Holm, A.	NASA Goddard Space Flight Center, MD
Howell, S.	Michigan
Iyengar, K. V. K.	Mata Instituto of Bundamental Barrens
-2 5 7 7 7	Tata Institute of Fundamental Research, India
Johnson, H. M.	
Johnson, T.	Lockheed Missiles & Space Co., Inc., CA
Vofator W	Massachusetts Institute of Technology
Kafatos, M.	George Mason University, VA
Karle, J. H.	Lewis and Clark College, OR
Kemper, E.	Johns Hopkins University, MD
Kent, H. P. Kent, H. P.	AVCO Everett Research Laboratory, MA
Kent, H. P.	AVCO Everett Research Laboratory, MA
Kenvon. S.	University of Illinois
Kilkenny, D.	South African Astronomical Observatory
King, A. R.	University of Leicester England
King, A. R.	University of Leicester, England University of Leicester, England
Kiplinger, A. L.	NACA Coddord Cooper Blinks Control vo
Kitamura, M.	NASA Goddard Space Flight Center, MD
Kleinman C	Tokyo Astronomical Observatory, Japan
Kleinman, S.	Lincoln Laboratories, M.I.T., MA
Kosth, R.	Jet Propulsion Laboratories, CA
Krautter, J.	Max-Planck Institut, West Germany Max-Planck Institut, West Germany Max-Planck Institut, West Germany
Krautter, J. Krautter, J.	Max-Planck Institut, West Germany
Krautter, J.	Max-Planck Institut, West Germany
la Dous, C.	Universität München, West Germany
la Dous, C.	Universität München, West Germany Universität München, West Germany
Langmesser, U.	Weizmann Institute of Science, Israel
	France
	Observatorio Astronomico de Madrid,
	Spain
	Sky & Telescope magazine
MacRobert, A.	Sky & Telescope magazine
MacDobert &	Sky & Telescope magazine
MacRobert, A.	Sky & Telescope magazine

MacDobert A	Chir f Mologopo magazine
MacRobert, A.	Sky & Telescope magazine
Magalhaes, A. M.	Vatican Observatory Research Group
Mateo, M.	University of Washington
Mayer, B.	California
Mazeh, T.	Tel Aviv University, Israel Tel Aviv University, Israel
Mazeh, T. Mazeh, T.	Tel Aviv University, Israel
Mazeh, T.	Tel Aviv University, Israel
Michalitsianos, R.	NASA Goddard Space Flight Center, MD
Naiden, J.	Washington
Noronha D	
Noronha, P.	Association of Friends of Astronomy,
· · -	Goa, India
Orlati, T.	Case Western Reserve University, OH
Pasachoff, J. M.	Williams College, MA
Pasachoff, J. M.	Williams College, MA
Pasachoff, J. M.	Williams College, MA
Patterson, J.	Harvard-Smithsonian Center for
	Astrophysics, MA
Patterson, J.	
raccerson, U.	Harvard-Smithsonian Center for
	Astrophysics, MA
Percy, J. R.	University of Toronto, Canada
Persinger, T.	East Tennessee State University
Polidan, R.	University of Southern California
	Pennsylvania
	Massachusetts
Sherrington, M.	University of Leisester England
cill x	University of Leicester, England
Silk, A.	Massachusetts
Sion, E.	Arizona State University
Snijders, T.	Royal Greenwich Observatory, England
Stencel, R.	NASA, Washington, DC
Stover, R.	University of California, Santa Cruz
Szkody, P.	University of Washington
Szkody, P.	University of Washington University of Washington
Szkody, P.	University of Washington
Szkody, P.	University of Washington University of Washington University of Washington
Szkody, P. Szkody, P.	University of washington
	University of Washington
Szkody, P.	University of Washington
Szkody, P.	University of Washington University of Washington
Tapia, S.	University of Arizona
Terranegra, L.	Osservatorio Astronomico Capodimonte,
<b>3,</b>	Italy
Tomaino, T.	
Murner V C	Massachusetts Institute of Technology
Turner, K. C. Turner, K. C.	Arecibo Observatory, Puerto Rico
Turner, K. C.	Arecibo Observatory, Puerto Rico
Turner, K. C. Underhill, A. B.	Arecibo Observatory, Puerto Rico
	NASA Goddard Space Flight Center, MD
Viotti, R.	CNR Astrofisica, Italy
Vojkhanskaya, N. F.	Special Astrophysical Observatory, USSR
Wade, R. A.	University of Cambridge England
Wallerstein, G.	University of Washington Calfornia Institute of Technology
Wallerstein, G.	University of Washington
Wallerstein, G.	University of Washington
	University of Washington
Wallerstein, G.	University of washington
Wannier, P. D.	Calfornia institute of Technology
Wargau, W.	Universitat Erlangen-Nurnberg, West
	Germany
Wargau, W.	Universität Erlangen-Nurnberg, West
_	Germany
Waugh, R.	Worcester Science Center, MA
Webbink, R. F.	
	University of Illinois
White, N.	European Space Observatory, England
White, N.	European Space Observatory, England
White, N.	European Space Observatory, England

Whitney, T.

Wild, A.

Williams, R. E.

Willson, L. A.

Willson, L. A.

Willson, L. A.

University of Arizona

University

University

University

University

University

University

University

Iowa State University

Villson, L. A.

Iowa State University

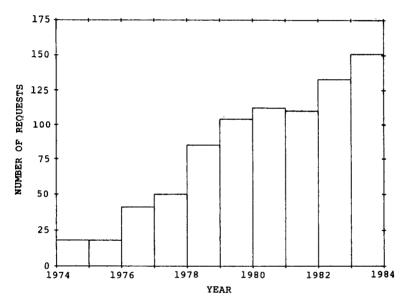


Figure 1. Graphic representation of the number of special requests for AAVSO data filled each year since 1974.

<sup>\*</sup> Name repeated for each request.

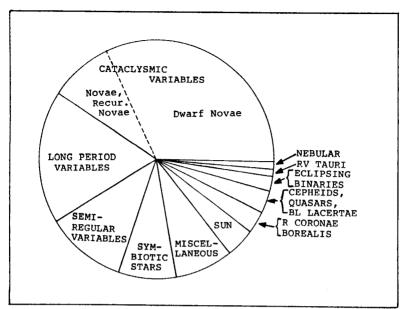


Figure 2. Types of variable stars for which data were requested during the fiscal year 1982-83.

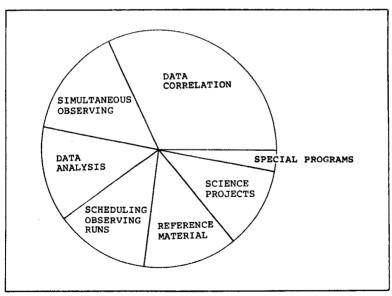


Figure 3. Areas in which AAVSO data and services were used during the fiscal year 1982-83.

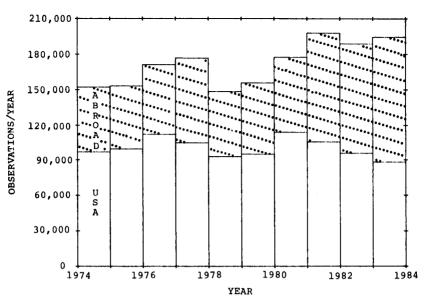


Figure 4. Graphic representation of the number of observations received at Headquarters each year since 1974.

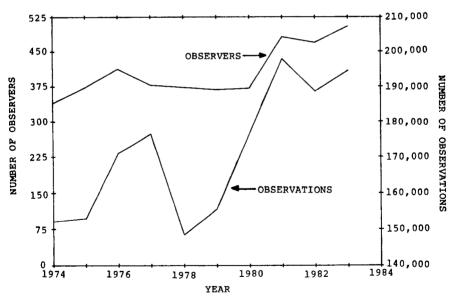


Figure 5. Graphic representation of the number of observers and observations for each year since 1974.