ANNUAL REPORT OF THE DIRECTOR OF THE AAVSO FOR THE YEAR ENDING SEPTEMBER 30, 1966

It gives me great pleasure to present herewith my 17th Annual Report of the Director of the AAVSO for the year 1965-66. Once again we have broken records with our increased activity. The numbers of observations received are really becoming astronomical.

We continue to enjoy our roomier headquarters office on Concord Avenue. It is a great satisfaction to have a place where we can have people come in to make use of the great fund of information we have accumulated.

SPECIAL REQUESTS. We continue to receive many requests from astronomers for unpublished results of our observations.

Once again Dr. Yoshio Fugita sent us a list of long period variables for which he requested advance information on the predicted times of maxima.

Vicki Watt, a graduate student of the University of Toronto at the David Dunlap Observatory wrote for information about a group of R Coronae Borealis stars which she plans to study during the next few years. We were able to help her some, but many on her list of stars we should certainly like to add to our program. We are in need of charts and comparison star magnitudes, a difficult and time consuming project.

Dr. Krzysztof Serkowski of the Lowell Observatory has set up a program of photoelectric polarization observations of Mira variables. His finding of 6% polarization in V Canum Venaticorum appeared recently in the Astrophysical Journal. He makes a special plea for observers to follow 131546 V CVn even more closely in the future. Dr. Serkowski also requested advance predictions of times of maxima of the bright Mira stars in order to set up his program in advance of his observing periods.

Polarization in long period variables is a new and very exciting development in the study of these stars. Dr. C.R. O'Dell of Yerkes Observatory is planning an observing program with Robert Zappala, a graduate student at Yerkes. He asked for current information on about a dozen of the brighter long periods, and we have sent him copies of our plots of observations.

Chris Terrill, a graduate student at the Warner & Swasey Observatory is continuing work on infra-red spectra of a large group of long period variables. This work was started by the late Dr. Nassau, who requested information on the light curves several times in the past. Mr. Terrill's list was such a lengthy one, he came to Cambridge with his wife, and the two of them spent a good part of a week going over our light curves, and collecting data.

Dr. K.O. Wright of the Dominion Astrophysical Observatory asked for observations of the interesting eclipsing system, VV Cephei. This star has an eclipsing period of about 20 years, and has been suspected of having a superposed period of about 100 days. Unfortunately our observations were very meagre.

Dr. Shaw of Cornell University asked for an ephemeris of the eclipsing binary U Cephei. Leif Robinson of Sky & Telescope gave us corrected elements and we sent Dr. Shaw a new set of predictions.

We receive many requests for help in setting up observing programs from colleges,

astronomy clubs, and students who want to start a science fair project. Complete answers to these requests would require much more time than we can possibly give, but we do try to give them some material which should aid in setting up the programs.

Professor Hunziker of Chico State College at Chico, California, has followed up our suggestions by ordering a large number of charts, and we are hoping for many observations from his students.

Dan McCammon of the California Institute of Technology asked for observations of the star 235659 WZ Cas. On the night of September 12-13, 1965 some unusual apparent changes were observed in its 2-2.5 micron spectrum. We receive many observations of this star, but unfortunately there was a gap of about 10 days around the critical date. We need a few very careful observers who will observe this star very frequently.

Dr. Hugh Johnson of the Lockheed Research Laboratories asked for an identification chart of CI Cygni. It is not on our program, but we found a chart in our files which we sent him. CI Cygni is the exciting variable which may be an X-ray star and about which Miss Hoffleit will report later during this meeting.

Leonard Solomon of the Smithsonian Astrophysical Observatory has a large project on flare stars, and frequent consultations have been of mutual benefit.

Dr. Robert Garrison of the Mt. Wilson & Palomar Observatories is beginning a joint program with Drs. Keenan and Deutsch to further investigate the spectroscopic characteristics of long period variables. He has requested many of our publications and has also joined the Association in order to keep in close contact with our work.

From these people and many others, we frequently hear the remark, "The AAVSO is the only place we could expect to get this information"!

Each year we get a number of requests for some information on photoelectric photometry. John Ruiz and Arthur Stokes very kindly take care of answering these letters.

Our other committee chairmen, Cap Hossfield of the Solar Division, Roy Seely of Occultations, and David Williams of the Eclipsing Binary Committee very kindly answer information requests on their respective subjects.

FINANCES. In spite of this wide appreciation of the value of our work, we continue to have financial troubles. We need more assistance in the office, but it is impossible unless we get more financial help from sources outside the AAVSO.

MEMBERSHIP. We are very happy to report that our membership continues to grow. We elected 40 new annual members, I new sustaining, and 3 changes from annual to sustaining at the Fall Meeting in Cambridge. At our Spring Meeting in Chicago we elected a record number of 73 new annual, 2 new sustaining members, and 4 annual members changed to sustaining membership.

We are very sorry to have to announce the death of 2 of our members: Dr. Dirk Brouwer, Director of Yale University Observatory; and Maxwell Kimball of Glen Ridge, New Jersey, an active observer during the 1950's.

SUBSCRIPTIONS TO PUBLICATIONS. 28 libraries and observatories subscribe to our publications. This includes the Mt. Wilson and Palomer Observatories who subscribe to our Special Services. We also have a number who subscribe to certain publications such as the Quarterly Report, Annual Predictions, or Solar Bulletin.

REQUESTS FOR INFORMATION. We received 762 requests for information during the year. Most of these wanted to know about the AAVSO, although some wanted all the information we had about astronomy, and others everything about variable stars: complete lists, charts, photos, light curves, etc. Each year we get new members and some very good new observers as a result of our answers to these letters.

LIBRARY. The McAteer Library continues to grow at the rate of about 400 acquisitions per year. This includes books, periodicals, observatory publications, reprints, etc. In our new headquarters we have shelf space to house the library for some years to

<u>PUBLICATIONS</u>. Annual Reports of the Director, Treasurer, the Endowment Fund and a few committee reports were published in the Fail. We hope to have a more complete set of committee reports in the future.

A membership list, list of AAVSO officers, Julian Day Calendar, and Bulletin 29, Predictions of Max. and Min. of Long Period Variables for 1966 were mailed soon after the first of the year.

Two AAVSO Abstracts, reports on papers presented at the Fall and Spring Meetings, were published; also 4 numbers of News Notes, edited by Carolyn Hurless.

A new publication -- Information Sheets of the Eclipsing Binary Star Program was sent to all members to keep them informed about the work on Binary stars.

Variable Star Notes have appeared in each number of the Journal of the Royal Astronomical Society of Canada, and each issue of the Review of Popular Astronomy has had the column The Director Reports. Each of these journals contains a list of observers and the number of observations each made during a 2-month period:

The Solar Bulletin is issued each month with a summary table giving the sunspot counts of each observer. The Hational Bureau of Standards prints the daily values of R_A (American Relative Sunspot Numbers) from the AAVSO Solar Division observations.

Sky & Telescope Magazine also prints these $R_A{}^{\prime}$ s each month, in addition to a list of predicted dates when the brighter long period variables are due to reach maxima during the month.

Special predictions of dates of maxima and minima were also made for the Handbook of the Royal Astronomical Society of Canada. Shorter lists were made up for the Swiss Astronomical Society for their Handbook, for Trieste Observatory Almanac and for C.L. Johnson for his Celestial Calendar.

Quarterly Report 27 was printed and distributed to contributors in the latter part of the summer. Work is now progressing on Report 28, which will be published as soon as possible.

ANNUAL SUMMARY OF OBSERVATIONS. Records are made to be broken, and we have again exceeded all previous numbers of observations received during the year: 133,667

observations from 311 observers.

A total number of 1,520 monthly reports was received -- an average of about 126 per month. Regular monthly reports were received from 34 observers, 18 missed one month, and 12 sent 10 reports during the year.

84 observers from 18 foreign countries made 36,240 observations, or 27% of the total. 227 observers from 35 states contributed the other 73%.

The total number of observations received by the AAVSO is now 2,405,288. It looks as though some lucky observer will make the $2^{1}/2$ millionth observation during the coming year.

Table I gives a list of countries with the number of observers and total of observations from each. Argentina takes first place with 11 observers making 15,552 observations.

Table II gives a breakdown for the 35 states. Ohio leads the list with 30 observers making 19,431 observations, and is followed by Pennsylvania with 7 observers making 11,950 observations, then comes New York with 30 observers making 11,517.

Table III lists all observers for the year 1965-66 in order of number of observations. The letter S followed by a number indicates the number of Inner Sanctum (13.8, 13.9, etc., and fainter than 14.0) observations.

This year first place in number of observations is taken by our young member, Robert Monske, of Mercer, Pennsylvania, with the record number of 11,407 observations, 746 of which were Inner Sanctums. Robert applied for membership on his 16th birthday in February last year, and sent in his first variable star report in April. He made over 2,000 observations during the last half of the year and made 14th place in the list of observers. It was very apparent that he had excellent eyesight and fine observing conditions for his 8-inch reflector. He became interested in eclipsing binaries and then in the RR Lyrae stars (Capheids with periods less than half a day). His long runs of observations on the RR Lyrae stars should be a good contribution to variable star astronomy, as are his many timings of minima of eclipsing binaries.

TABLE I - COUNTRIES

Country	No. Observers	Total Obs.	Country	No. Observers	Total Obs.
Argentina	11	15,552	Jamaica	1	24
Australia	3	606	Japan	1	2,474
Belgium	ĺ	418	Mexico	1	907
Brazil	9	998	Nigeria	1	162
Canada	17	3,017	Peru	1	12
Chile	30	5,388	Rhodesia	1	123
England	i	16	S.Africa	1	4,644
France	1	367	Switzerland	1	1,047
Germany	2	450	U.S.A.	227	97,427
Holland	ī	35	Total	311	133,667

TABLE II - UNITED STATES

Alabama	3	56	Maine	2	1,656	Oklahoma	2	157
Arizona	1	14	Maryland	1	11	Ore gon	5	144
California	24	8,547	Massachusetts	18	2,700	Pennsylvania	7	11,950
Colorado	3	373	Michigan	11	990	Rhode Island	3	607
Connecticut	9	3,973	Minnesota	5	4,917	Texas	3	182
Florida	8	2,598	Missouri	5	7,869	Utah	2	632
Georgia	2	1,175	Montana	2	1,577	Virginia	6	2,987
Hawa i i	1	12	N. Hampshire	5	415	Washington	1	10
I daho	1	3	New Jersey	9	5,818	W. Virginia	1	85
Indiana	2	1,709	New York	30	11,517	Wisconsin	5	281
Illinois	17	4,888	N. Carolina	1	111	Wyoming	1	. 3
Kansas	2	38	Ohio -	30	19,431	≯īotal	228	97,427

^{*} One observer from 2 different states.
(Maine and Florida)

Second place in number of observations was taken by Carolyn Hurless, with 6,271 observations, including 1438 Inner Sanctums. Mario Vattuone of Argentina was in 3rd place with 5,433; Marvin Baldwin was 4th with 5,302; and John Bortle was 5th with 5,183 observations. Four observers made over 4,000 each; Miguel Cerruti, 4,814; Reginald P. de Kock, 4,644; Curtis Anderson, 4,461; and Leslie Peltier with 4,003. Peltier made a record with 3,085 of his observations Inner Sanctums.

Five observers had over 3,000 observations: Thomas Cragg, 3,815; Carmine Borzelli, 3,611; Roger Kolman, 3,418; Clinton Ford, 3,299; and James Thomas, 3,298. Eight observers made between 2 and 3,000; 10 between 1 and 2,000; 17 between 500 and 1,000.

Fifty-one observers made 10,046 Inner Sanctum observations during the year. This was a smaller number of observers than last year, but many more faint observations.

TABLE 111 - AAVSO OBSERVERS 1965 - 1966

2 3 4 5 6 7 8	Robert Monske, Penn. Carolyn Hurless, Chio Mario Vattuone, Argentina Marvin Baldwin, Missouri John E. Bortle, New York Miguel A. Cerruti, Argentina Reginald P. deKock, S. Africa Curtis E. Anderson, Minn. Leslie C. Peltier, Ohio	11,407 \$746 6,271\$1438 5,433 5,302 \$ 19 5,183 4,814 4,644 4,461 \$246 4,003\$3085	20 Edward G. Oravec, N.Y. 21 Diane Lucas, Ohio 22 William Lowry, Calif. 23 Wayne M. Lowder, N.Y. 24 Robert N. Stewart, Ind. 25 Adolfo Lecuona, N.J. 26 R.F. Swanberg, Montana 27 Lawrence Hazel, N.Y.	2,317 2,014 S247 2,011 S 47 1,715 S 41 1,653 S 47 1,660 1,365 S233 1,175 S 2
10 11	Thomas A. Cragg, Calif. Carmine Borzelli, N.J. Roger Kolman, Illinois	3,815 \$839 3,611 \$ 93 3,418 \$667	28 Eugene Powell, Georgia 29 Donald Saccone, Mass. 30 Carmen Martinez V., Chile 31 Juan C. Forte, Argentina	1,150 1,102 1,073 1,070
14 15	Clinton Ford, Conn. James Thomas, Ohio Cyrus F. Fernald, Maine&Fla. Lancaster Hiett, Virginia	3,299 \$902 3,298 \$ 73 2,828 2,708	32 Kurt Locher, Switzerland 33 Domingo Taboada R., Mex. 34 Roger Saladzius, Canada 35 Vicki Schmitz, Ohio	1,047 S 2 907 S 11 854 844 S290
17 18	Etsuiku Mochizuki, Japan Robert M. Adams, Missouri Miguel A.E.Barone, Argentina	2,474 2,437 \$511 2,435	36 Eduardo Cabello A.,Chile 37 Kenneth J. Delano,Mass. 38 Robert F. Wing,Calif.	839 712 690 s 9

39 Raymond Thompson, Canada	672	91 James E. Ellerbe, N.J.	183
40 Daniel P. Loring, Utah	592	92 Donald J. Hutter, Penn.	176
41 Jose M. Luiz da S., Brazil	587	93 Everett Z. Randall,Fla.	176
42 Stephen P. Cook, California	584	94 Donald A. Rosenfield, Mich.	174 s 5
43 R.C. Shinkfield, Australia	548	95 A.Thomas Murphy, Calif.	171
44 Roberto H. Mendez, Argentina		96 Robert Crumrine, N.Y.	168
45 Allen C. Montague, Illinois		97 Arthur J. Stokes, Ohio	164
46 Carlos L. Segers, Argentina	525	PEP: RZ Cas; BV 382	
47 Karl Simmons, Florida	517	98 Howard Nightingale, Nigeria	162
48 Elizabeth Jurlow M., Chile	509	99 D.J. FitzGeraid, Canada	158
49 Hugo G. Marraco, Argentina	508	100 John P. Wikswo, Virginia	157
50 Athos Robinson O., Chile	486	101 Walter R. Hampton, Conn.	155
51 Allen S. Heasley, Ohio	454 \$ 52	102 Ralph S. Bates, Mass.	152
52 T. deMenton, Belgium	418	103 Leopoldo Celis S., Chile	150
53 Robert Choate, Ohio	410 s 26	104 Juan C. Muzzio,Argentina	148
54 Andy Howell, Germany	402	105 Walter S. Houston, Conn.	140 S 9
55 Augusto de la Vega O., Chile		106 Jose Olivarez, Texas	139
56 Hugh N. Ross, Canada	390	107 Terry Kesler, Ohio	136
plus 1 ^h 35 ^m flare stars	_	10S Richard Chadwick, Colo.	133
57 Pedro Santander E., Chile	387	109 David B. Williams, Illinois	131 S 1
58 Richard A. Wohlever, Ohio	374	110 Maurice Wunderlich, Colo.	129 \$15
59 Alphonse Oberstatter, France	- ·	III Steve Bucaro, Illinois	1 27
60 Gary McGinnis, Minn.	334	112 Arthur Pearlmutter, Mass.	1 24
61 Edward Turco, R.I.	330	113 Robert Allin, Canada	123 5 1
62 Ronald Domen, Ohio	323 \$ 16	114 R.H. Bicknell, Rhodesia	123
63 Addie A. Chamorro, Chile	321	115 Robert Vissa, Mass.	123
64 David W. Rosebrugh, Florida	306	116 Wilson H. Baade, Brazil	1 20
65 Joseph A. Anderer, Illinois	303	117 Rodrigo de la Vega L.,Chile	119
66 G.L. Fortier, Canada	295	118 Donald C.Livingston, N.Y.	119
67 Allen Stearns, N.J.	291	119 DeLorne Diedrich, Ohio	117 S 4
68 Michael Sakarias, Calif.	289	120 Ronald Royer, Calif.	116 S 2
69 Carl A. Anderson, N.H.	286	121 Robert B. Johnston, Canada	115
70 Fred Montague, Mass.	278	122 Paulo Mourilhe S., Brazil	114
71 Patricio Campos P., Chile	275	123 James Banks, N.C.	111
72 C.J. Renner, Michigan	271 S 17	124 John Mariska,Colorado	111
73 Francis P. Morgan, Canada	266	125 Ida Horton, Oklahoma	110
74 David M. Friedman, N.Y.	263	126 David G. Hughes, Mass.	110
75 Alfred Puget, R.I.	258	127 Frank J. Kelly, Florida	108
76 David Florkowski, Michigan	256	128 Edwin E. Friton, Missouri	107 S 5
77 Charles E. Scovil, Conn.	256 S 10	129 George Diedrich, Ohio	104 S 3
78 John J. Ruiz, Penn.	251	130 Craycroft Wilson, N.Y.	100
PEP: BV 382	a. 1.1	131 Eugenio Aranguiz W., Chile	93
79 Jack L. Strater, Ohio	244	132 Victor Cabrera A., Chile	86
80 Edward A. Halbach, Wisc.	233 S 22	133 Strathmore R.B. Cook, Minn.	85 S17
81 Charles L. Ricker, Michigan	230 \$ 21	134 William C. Grady, West Va.	85
82 Albert P. Sharpless, Fla.	229 S 2	135 Sheila V. Bishop, Conn.	84
83 Charles A. McPherson, Mont.	224	136 Jerald R. Mishler, Oregon	82
84 Richard W. Schaupp, Ohio	219 \$ 12	137 Juan Aguillon M., Chile	81
85 Hyman Roche, New York	210	138 James M. Whitehead, Ohio	79 S 2
86 Harry V. Roberts, Illinois	204	139 Carios E.A.Gondell, Argentina	73
87 William Werner, Ohio	203	140 Francisco Acevedo C., Chile	72
88 Claude B. Carpenter, Calif.	199 \$162	141 Frank Chapman, New York	70
89 Larry Bornhurst, Calif.	195 S 46	142 Sergio Guzman B., Chile	69
90 Dario Farren M., Chile	195	143 Ruben Soto O., Chile	68

146 Leonard A.Bartlett, Calif. 147 Chester F. Schott, N.J. 148 Wayne Woodward, N.H. 149 Ernest Zander, Illinois 150 Margaret Olmsted, Maine 151 David Maleham, N.H. 152 Tony Mallama, Ohio 153 F.N. Traynor, Australia 154 Sterling R. Anderson, Va. 155 Fred Sanner, Penn. 156 Daniel W. Abdon, Calif. 157 David Brin, California 158 Douglas Smith, Virginia 159 Jeremy H. Knowles, Germany 160 Robert T. Sheppard, Calif. 161 Claud Lacy, Oklahoma 162 Keith Axelson, California 163 Universal Students Ast., Calif. 164 Albert J. Kaupa, N. Y. 165 Jorge Chelen F., Chile 166 Leonard Kalish, Calif. PEP: WW Aur; BV 544 167 William Mintel, N.J. 168 John H. Wulf, Texas 169 Steven Peterson, Utah 170 David H. Levy, Canada 171 J. Rand Baldwin, Florida 172 Ron Blixt, California 173 G. Comello, Holland 174 B. Franklyn Shinn, Canada 175 R. Terence Dickinson, Canada 176 Robert A. James, Wisconsin 177 Michael R.Meiley, Penn. 178 Daniel Thompson, Minnesota 179 Albert Ullmann, N. Y. 180 Raymond E. Wierowski, N.Y. 181 Paul Etzel, Kansas 182 John F. Hoynos, Ohio 183 John T. Goodwin, Mass. 184 C.F. Schwerdtfeger, Canada 185 James E. Bowers, Calif. 186 Marianela Gonzalez V., Chile 187 James McDonald, Ohio 188 W.E. Farrar, Georgia 242 M.S. Goldberg, Canada 189 Ronald Henderson, Illinois 8 25 243 Jon H. Lutz, Wisconsin 190 Barry Beaman, Illinois 8 25 191 Jose J. Dias N., Brazil 244 Mark Middleton, Illinois 8 25 245 Michael Roche, N. Y. 192 Tom Hering, Florida 8 246 Robert Rotstan, Alabama 25 193 Arthur Johnson, Calif. 7 24 247 Alvin Liff, New York 194 E.C. Melville, Jamaica 7 248 Joseph R. Pehrson, Michigan 24 195 Randolph Sheaff, Ohio

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7 281 Luiz Muniz B., Brazil
249 Raul Rodrigues C., Chile
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                                       7 282 George M. Pitcovich, Ohio
250 John Roller, N.H.
                                      7 283 George O. Pitcovich, Ohio
251 Patrick L. Walden, Canada
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                                      6 284 David Strong, Illinois
252 Ronald Dentinger, Wisconsin
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                                       6 285 James Werner, Ohio
253 James Giordano, New York
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                                       6 286 Mike V. Wright, Idaho
254 LeRoy Johnson, New York
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                                       6 287 Tim Hunter, Illinois
255 Hank Karow, New York
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                                       6 288 Nancy Mikula, Wisconsin
256 Margaret W. Mayall, Mass.
                                                                                   2
                                       6 289 A.J. Morehouse, Michigan
257 Sylvia Mosure, New York
                                                                                  2
                                       6 290 Eugene A. Pallat, Ohio
258 Lawrence B. Nadeau, Mass.
                                                                                  2
                                       6 291 Arthur Rubin, Mass.
259 Gustavo J. Schiavone, Argentina
                                                                                   2
                                       6 292 Gregory Stone, Mass.
260 J. Wayne Wooten, Florida
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                                       5 293 Donald F. Weber, Ohio
261 Dino Argentini, Mass.
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                                       5 294 Ruth T. Baade, Brazil
262 Paul A. Ballentine, Virginia
                                       5 295 Alan J. Birkner, Illinois
263 Craig P. Crossen, Minnesota
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                                       5 296 Howard Burnstein, N. Y.
264 Edgar Everhart, Conn.
                                       5 297 Christopher Edsall, Michigan
265 Steve Huston, California
                                       5 298 Charles N. Fallier, N. Y.
266 Gary Kidwell, California
                                       5 299 John P. Goss, Missouri
267 Joseph F. Periale, N. J.
                                       5 300 - Guerra, Texas
4 301 Z. Levy, New York
268 Ronald E. Powaski, Ohio
269 Timothy Brown, Arizona
                                       4 302 William Maggio, New York
270 Hector Contreras, Chile
                                      4 303 Natalie E. Rhodes, Mass.
271 Oscar Espinoza N., Chile
                                      4 304 Helen Schnide, New York
272 Carol J. Gray, Illinois
                                      4 305 Thomas Smith, New York
273 Victor Matchett, Australia
                                       3 306 William Spratley, Ohio
274 Santiago Barrera, Chile
                                       3 307 Michael Stein, New York
275 Alois Becker S., Chile
                                       3 308 Kenneth Weitzenhoffer, N.Y.
276 Patricio Brownell, Chile
                                                                           1h AD Leo
                                       3 309 Glenn Boire, Canada
277 Luis A. Cruciani, Argentina
                                                                           1h AD Leo
                                        3 310 Per Joenson, Canada
278 Robert Jacobson, Wyoming
                                           311 Ernie Pfannenschmidt, Canada 45<sup>m</sup>AD Leo
                                        3
 279 Edward Lancey, New Hampshire
 280 Gary L. Mann, California
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OTHER ACTIVITIES. I would like to thank the Chairmen of our various Divisions and Committees for the fine work they have done. Their reports follow this, so it is not necessary to repeat them here.

PERSONNEL. First of all, I want to thank Mrs. Florence C. Bibber for her work as AAVSO Assistant. It is always a pleasure to work with her.

John Bibber continued to work part time during the school year, and was very help-ful. When he had to leave at the beginning of the summer, his younger brother, Thomas, came in and helped part time, and proved himself a worthy successor.

I also want to thank John for finding time between his college classes, to come over to the office and do the lettering on the certificates to be given to the New Members elected at this meeting.

All the officers, members and friends of the AAVSO deserve our thanks for all the things they have done for us during the year. It gives me great pleasure to acknowledge and thank them.

Respectfully submitted,

Margaret W. Mayall, Director