A.A.V.S.O.

SOLAR DIVISION BULLETIN

Neal J. Heines, Editor

July 1950
Number 55 Page 140

560 Broadway.
Paterson 4, New Jersey

With the present disruption of the mail schedules by our government it will be necessary to mail your monthly reports earlier in order to meet the dead line date.

A list of projection slides $3\frac{1}{4}$ x 4 is issued as a supplement to the current issue of this Bulletin; we will add additions to this from time to time and have left space for this on the supplement. A few miscelleaneous slides are also listed.

We invite your kind consideration and indulgence to the supplement regarding an existing condition of A.A.V.S.O. Headquarters at Cambridge Mass.

Again we are confronted by the vacation period and need every observation possible during the summer months.

Mr. A.K. Herring"s seeing conditions report follows the Chase article on Solar Photography. This was done in this manner in order to utilize space.

STATISTICS

The total number of observed groups for the month of May was----27
The total number of days with sunspots for May was ----------31
Zurich"s Provisional Relative Sunspot Number for May was ------104.8
Mean (monthly) Sunspot Area (U.S. Naval Observatory)-Not released

*The highest sunspot group number, as assigned at Solar Division Headquarters was observed on June 13th; it represented a single spot on the east limb of the sun, North Belt, it was assigned group number 148.

*Group counting reference for observers.

Predictions of the smoothed monthly sunspot numbers for the coming six months are as follows.

June	98	Sept.	89
July	95	Oct.	86
Aug.	92	Nov.	84

Broadcast by Swiss Broadcasting Corp.
Released by Prof. M. Waldmeier
Director, Swiss Federal Observatory
Zurich, Switzerland

PUBLICATIONS

"On the Turbulent Velocities of Solar Granules" Richardson & Schwarzchild

"The Use Of Savart Fringes In The Observation Of Zeeman Effects In Sunspots." Yngre Ohman

" Note on the Chemical Composition of the Sun" M.H. Harrison

Astronomical Journal Vol. 111 No. 2, pp 351,362,446 resp.

PUBLICATIONS CON'T

"New Observations of Solar Spicules" -- Roberts-Brenton-Shapley-Kopel

Deals with time variations of Spicules.

"The Present Phase of the Solar Cycle" Paul Roques
Astronomical Journal Vol 55; No 3. P 80

"The Private Observatory of R.N. Buckstaff."
Sky and Telescope Vol. lx No 8 June 1950 p.190

Pluto's Diameter is less than Earth's. 3600 m.
Science Weekly News Letter June 10, 1950

MONTHLY SUMMARY OF
A.A.V.S.O. AURORA REPORTS

MAY - 1950

DATE	TIME USED E.S.T.	FORM, BRIGHTNESS & COLOR									ELEVATION			STATION
		1			2			3						
	Time of Observation	G	H.A. H.B.	R.A. R.B.	R	D	C	P.A. P.S.	F	D.S.	1	2	3	
4/13	21:00	G I									10° N			Springfield Vermont.
4/14	22:30	G I									15° N			"
4/16	22:00	G III									15° N			"
4/28	22:20	G I									10° N			
5/2	23:10 To 23:55				G III							10° S		WILTON MAINE.

Reports from - Margaret Beardsley & Cyrus Fernald

Roy A. Seely

Roy A.Seely.
939 Park Avenue,
New York 28, N.Y.

Special Note To Observers.
Mr.Herbert A.Luft of 42-10 82nd., Street,Elmhurst L.I. New York, is making a special investigation on the evaluation of sunspot numbers. If you are contacted by Mr.Luft kindly co-operate with him.

Supplement to July Bulletin

SOLAR PHOTOGRAPHY

H.B. Chase

The writer has developed a system of Solar photography aimed at simplicity, minimum investment in equipment and economy in operation. Results have been very satisfactory and dependable.

At the outset one is confronted with the obvious difference that Solar photography is concerned with light direct from the source instead of reflected light as in conventional photography. That raises a series of problems in minimizing the excessive light and heat.

Ordinary camera shutters are not fast enough and the aperature diaphrams will not stand the heat of the concentrated beam of light. Several cameras, shutters and apertures were tried but the only satisfactory camera appears to be the Graflex with its focal plane shutter, speeds up to 1/1000 nth second, and disappearing reflex mirror. The latter element actually protects the roller curtain during focusing, and permits focusing up to the instant of exposure. That is important because the Sun moves across the field of view rather slowly, but it does move. It would be desirable, but it is not at all necessary, to have the outfit equipped with power-drive. Actual exposure times are between 1/300 th and 1/500 th seconds for best results.

A 4" x 5" Graflex camera is used because that size of pisture seems to be the most practical. It is convenient for mailing or filing. Smaller cameras were tried with the enlargement process but there seemed to be a loss in the enlargement process. A complete image of the Sun up to 3½" can be made on a 4"x5" film, with care in focusing. A 3" image can be obtained with rough focusing.

Kodak "Commercial" film cut 4 x 5 seems to be the most satisfactory and readily available film to use. Other brands and other grades of Kodak film were used with less satisfaction. The relatively slow "Commercial" film helps toward the reduction of excessive light.

In conventional photography today, there is a clamor for fast film and fast lenses which are very expensive. For our purposes the slower the film the better the results. We still must have a fast shutter, however,

As to the printing of the pictures, there were three methods available,

(1) The commercial mass production offered by corner drug stores and other agencies,
(2) The use of a dark room enlarger, previously referred to.
(3) The use of a contact printer.

The first method was entirely unsatisfactory. Films and prints do not receive individual attention. Apparently some of the finishers thought that Sun spots were defects in the film or dust on the lens and tried to eliminate them.

The second method gives only fair results, but requires a considerable investment if one does not already own an enlarger. Enlarger papers are also more sensitive and difficult for the amatuer to process.

The third method, contact printing, was finally adopted principally because of small investment in equipment and the availability of slower papers. Kodak Azo F1 paper with low wattage Mazda lamp gives better results than does Kodak Velox in any grade. Even the Velox is too fast. It must be remembered that the background of sky light is very strong.

As to the development of both film and prints one should use only the formulae, time and temperatures recommended by the manufacturers. Short cuts produce poor results. If you intend to go into Solar photography, make up your mind to do everything yourself.

With this outfit, either the telescope or the camera may be used separately at any time. Neither is altered in any way, except that the regular camera lens is removed from the lens board and replaced by a telescope eyepiece for Solar work. A camera lens is not a magnifier.

The telescope has a three (3) inch objective stopped down to 2½", and has a 45" focal length. The eyepiece is 1.1" focal length Kellner type, war surplus item. The Omag Y3 yellow filter of solid glass is used between the eyepiece and film. Gelatin-between-glass filters will be burned out very quickly.

Comparison of Sunspot Numbers of Median of Regular Observers with Observations of A.K. Herring of Middletown, Ohio.

Grouped by months and by rating of seeing as given by AKH

Numbers given under each heading are: 1. Number of days AKH made observations with seeing conditions of that rating. Where two or more observations are made, day is placed in the classification of best seeing for that day.
2. Sum of AKH spot numbers for those days. 3. Sum of median spot numbers for those days.

1949	Poor			Fair			Good			Excellent		
Jan.	1-	121-	127	2-	316-	357	2-	247-	269	0		
Feb.	7-	1445-	1701	3-	643-	648	3-	599-	594	2-	628-	566
Mar.	13-	2153-	2625	5-	808-	998	1-	204-	199	0		
Apr.	8-	1320-	1567	6-	997-	1170	6-	1078-	1107	1-	173-	190
May	5-	717-	705	4-	603-	582	12-	2079-	1851	5-	872-	692
June	2-	409-	375	7-	995-	881	9-	1861-	1416	7-	1669-	1289
July	9-	1508-	1501	6-	881-	784	8-	1505-	1153	5-	1129-	904
Aug.	6-	1131-	1340	7-	1185-	1169	6-	1235-	962	5-	399-	370
Sept.	12-	2151-	2213	5-	781-	746	2-	541-	444	1-	176-	101
Oct.	5-	673-	646	7-	1389-	1196	6-	1295-	1129	3-	767-	589
Nov.	5-	819-	912	4-	995-	769	1-	220-	202	3-	948-	651
Dec.	10-	1202-	1471	3-	443-	467	1-	125-	116	0		

Totals:

83	59	57	32
13599	10036	10989	6761
14183	9767	9442	5352

AKH totals times k factor (1.09):

14822	10939	11978	7469

Percentage:

104.5	111.9	126.8	139.5

Days observable (%)

22.7	16.3	15.6	8.7

SPECIAL SUPPLEMENT

This is a heart-to-heart talk to all interested in the welfare of the American Association of Variable Star Observers.

The writer, who is president of this association has voluntarily investigated the business end of the AAVSO Headquarters at Harvard Observatory, and finds that some of the present working facilities are entirely inadequate and for the most part obsolete and worn out. We are speaking of the mimeograph and attending duplicating devices.

The AAVSO operates mainly through the Pickering Fund which is used up in salaries, miscellaneous expenses of the Recorder, and the purchase of paper for the mimeograms. The making of stencils for the quarterly reports,in whole or in part, has used the annual contribution of $200 from the AAV SO for publication expenses.

As it stands we are in dire need of $500.00 for a mimeograph and attending devices.

The AAVSO has made history in the astronomical field and warrants your indulgence in this matter. Contributions of $1.00 and upwards will be welcomed. The Solar Division, one of the AAVSO units, is starting the campaign with a gift of $25.00.

Kindly forward your contribution to;

A.A.V.S.O. Recorder
Harvard Observatory
Cambridge 38, Mass.

Neal J.Heines.
AAVSO President,
560 Broadway,
Paterson 4, N.J.

Solar Division Slide Rental Service
13¢ per Slide

8" Sun Tel., Proj., Zurich
4" Clark Tel., Direct, Heines
Granular Solar Surface, DIA. Solar image = 10"
Lg. SS. Grp. 6-17-1907
Great SS. 2-8-1917
" " 8-8-1917
24 Hour Development 8-18-19-1917
Spots 60 ft. Tel. Mt. Wilson 8-12-17
Largest Grp. photographed to 1-24-26
Spot Displacement 4-18 to 26 1934
Great SS. Grp. of 12-2-35
" " Grps. " 11-27-36
" " Grp. " 10-6-37
" " Grp. " 2-1-37
" " " " 2-1-37 Whole Disc
" " " " 1-18-38
" " " " 7-14-38
" " " " 10-12-38
" " " " 11-27-38
" " " " 8-1-39
" " " " 9-10-39
" " " " 10-23-39
" " " " 1-5-40
Parallel Grps. in Lat. 9-16-41
Great SS. Grp. 2-4-46
" " " Progress 2-2 to 7-46
Progress of Great SS. Grps 3-4-47
Four Largest SS. Grps. On Record
Polarity of SS. Grps. 2-11, 3-9, 5-5
Calcium Cycle phase activity
S.S. Grp. 9-2-1908 Ha Hydrogen
" " 8-30-1924 " "
N.W. Quarter Sun 1-5-17 Ha Hydrogen
N. and S. S.S. 9-9-1908 " "
Prominences Whole Sun. Cal.K 12-9-29
Active Prom. 140,000 m. high 7-9-17
" " 410,000 " " 5-29-19
Classification Solar Prominences
Prominence Series 6-18-29
Heliosaurus Prominence 6-18-1918
Prominence Series 8-6-1951
" Whole Sun Cal.K 12-9-29
" 9-9-1917
Prominence Progression
" 5-22-16 Ha Hydrogen

Path of Sun and Planets
Maunder Butterfly Pattern 3 Cycles
Sun & Planets to Scale, Dist, Diam.
Comparison, Sun, Moon's Orbit-Earth
Curve of S.S. Activity 1750-1930
Classification of Sunspots
Atmosphere 16 miles up
" 600 miles up
Record High Latitude Sunspot Grps.
Lengths of Sunspot Max. 1730-1937
" " " Min. " "
Deviation from Mean Values 1730-1937
Days with SS. 1 yr. Prior-Min & Min and 1 yr. after
Sunspot and Magnetic Activity Correlation Curves
Comparison Grp. Count Max. 1937-47
Histogram Life of Grp. Statistics
Graphs of 1937 Max. Daily Counts
" " 1944 Min. " "
" " 1947 Max. " "
" " 1947 Central Zone
Histogram Life of Sunspot Groups
Historic Record for 1947 Statistics
Dinsmore Analysis of SS. Nos. 1750-1960
Graph Life-Span of Grps. 1936-1937
" " " " " 1938-1939
Curve of Variability. Algol.
" " " , S.S. Cygni
" " " , R Corone Borealis
" " " , x Cygni
" " " , Mira 1906-08
Distribution of the Periods of Variable Stars
Distribution of the Periods VS. Visual & Photographic
Comet paths
Planetary Configuration
Average Hourly Rate of Visible Meteors
Artists conception of Nebulosity in Cignus