THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS DEC 8 1955

Solar Division BULLETIN

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43-58 SMART ST., FLUSHING 55, N. Y.

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October-November 1955

Nos: 110-111

PROBABLE CAUSES PRODUCING THE VARIATION OF THE SOLAR CONSTANT AND THE VARIATION OF THE BRIGHTNESS OF THE CORONA

Demetrius P. Elias
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In a recent paper (1) it is shown that there exists a relation between the number of granules covering the whole surface of the sun and the Wolf relative sunspot-number; in other words that the number of granules is varying in parallel with solar activity.

A mention of the probable variability of solar granulation is made for the first time by Dr. J. Bartlett, Jr. (2) and a group of observers of the AAVSO Solar Division, headed by Dr. J. Bartlett Jr., is dealing with the problem by carrying out visual observations.

The first results are fairly encouraging.*) However time will decide on the definite conclusions to be drawn from the visual method.

Probably, in addition to the number of granules, several other phenomena of solar granulation, such as the temperature of the granules, their lifetimes and their radial velocities are also varying (3)

We have already indications that there is a relation between the solar activity and the solar constant (4, 5).

According to all probabilities the cause producing the variation of the solar constant is the variation of the number of granules.

(continued on page 8)

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*) Editor's Note: We would appreciate to learn more about these encouraging results, particularly in form of specific data. A study reviewed in the Solar Division BULLETIN-June-July 1954 issue, failed to substantiate any such claims. A review of recent progress in granulation research will soon be published on these pages. hlb

SUNSPOT ACTIVITY from June through September 1955

The following table is based on the Preliminary Measures of sunspot areas, as well as on the final sunspot data published by the US Naval Observatory. It lists the different types of sunspot groups observed each day and counted each day as separate groups without reference to the preceding date. (for the sunspot-types see Solar Division BULLETIN March-April 1955 issue)

Group types:	A	B	C	D	E	F	G	H	J	MtW-gr.	$\overline{g}$	$\overline{A}$	R_A'
June........	4	7	3	3	10	0*	0	3	6	13	1.9	568	23.4
July........	24	14	8	4	0	0	0	8	8	20	2.5	272	23.2
August......	8	15	13	7	7	0	3	6	6	16	2.7	632	36.6
September...	17	10	13	8	0	0	0	12	16	15	3.9	508	40.7

Notes: MtW-gr = number of specific, identic groups
$\overline{g}$ = mean daily number of groups
$\overline{A}$ = mean daily /final/ sunspot area expressed in millionths of the visible hemisphere
R_A' = American Relative Sunspot Number
* ten groups were originally classified as F-type because of longitudinal extent (≥15°); they were however separated here into 3 D-type and 7 E-type

The following data are based solely on the US Naval Observatory's "Preliminary Measures" (all daily counts)

	June	July	Aug.	Sep.
sunspot groups in NORTHERN hemisphere	21	42	43	41
sunspot groups in SOUTHERN hemisphere	15	21	22	35
highest latitude	36°	36°	44°	43°
lowest latitude	15°	16°	13°	15°

JUNE had the first large and very active sunspot group of this new cycle (19th). On June 20 the large Southern hem. group reached a maximum area of 1391×10^{-6} ∅; located at 24°S; CMP 17.1. This group was associated with high flare activity (see SD Bull.106-7)

JULY, in contrast, had mostly small, very short lived groups.

AUGUST had one prominent group in either hemisphere and almost at the same longitude. The larger one was at 24°S; CMP 10.7, just about where the large June group was. North was a C-type group (with a large P-spot at 15N, CMP 10.3; and half the size of the large Southern E-type group. The Northern group was in an active region which showed a prominent group already in May.

SEPTEMBER had a large H-type group at 26N CMP 7.1, which appeared about 10° further North than the one of August, however, almost exactly where the May group occured (see SD Bulletin No. 106-107; June-July p. 7) This region is still active.

N O T E S for the S U N S P O T O B S E R V E R.

Starting with this issue the Solar Division BULLETIN will carry a special page containing in summary form all individual sunspot-number observations reported by our members. In as much as this page and its data will be primarily of interest to active observers and those interested in sunspot statistics, this page will be mailed only to these parties. Others may receive it upon request.

\- - - - - - - Editor

The former "American Sunspot Number Reductions" will once again be published in this BULLETIN, though in a somewhat different form. Mr. William A. Reid, 167 South Avenue, Hawthorne, New Jersey, prepared this new form as shown on the reversed side and pages 5 and 6.

The new "summary" lists under each observation first the total number of groups recorded by a particular observer, and then /after the comma/ also the total number of spots (i.e.all umbrae). Thus 6,27 means six groups and 27 individual spots. Multiplying the total number of groups by ten and adding the total number of spots we may obtain the "individual's" sunspot-number or R_i. For the 6,27 figures the particular R_i = 87 in accordance with the socalled Wolf formula (see S.D.BULLETIN June-July 1955 p.3)

We believe that this new form of listing both, the number of all groups and all spots, will enable individual observers to check their own observations more closely than the former listing of R_i-s did.

Some observers' "observatory coefficient" k_i has not yet been listed. These factors will be computed in the near future and provisional values will be then published. These figures will be "provisional" at least for another year so that they will reflect conditions of higher sunspot activity equally well.

ON REPORTING SEEING CONDITIONS in the "SOLAR DIVISION-SUNSPOT REPORT"

In our regular monthly SUNSPOT REPORT form column "cd" lists "visibility" on a scale: E /for excellent/; G /= good/; F /=fair/ and P /=poor/ and furthermore the extent of "cloudiness" on a scale 0 - 10 /0 for no clouds; 10 for 100% coverage/ This listing procedure will be continued.

Since it is necessary for sound statistical reasons to make a separations of observations made under relatively fair or better seeing conditions and those made under inferior seeing, the established dividing-line is at F4. Thus all observations from F4 and better (F3,F2..G..E) are usually considered by our Computer as "acceptable", while those of F5, F6..and all P observations are usually "rejected". Unfortunately, the "cloud extent" is not necessarily a good line of separation, nor would "transparency" be a better line of departure. The Solar Division Committee decided to let the individual observer be the judge. Henceforth kindly list seeing conditions in the usual manner, however indicate all observations made under ADVERSE conditions by crossing over the "visibility letter" or E̸ or G̸ or F̸ (all P are P̸). ADVERSE conditions could be poor transparency, moving clouds, very strong wind (interfering), brief or interrupted observations, etc. The other observations will be considered "made under CONDUCIVE conditions."

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AMERICAN SUNSPOT NUMBER OBSERVATIONS

SOLAR DIVISION

MONTHLY MEAN RA' = 40.7 September 1955 MONTHLY MEAN RZ = 41.9

OBSERVER	Kl.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Adams	0.70		5,29	7,29	/6,32	6,19		6,20	/6,18	5,12		4,8		2,11	1,13			2,10				0						1,7				
Beetle	1.06	8,29		7,28	7,21			/5,16	7,25	5,20		4,12	3,8	2,16	1,17		/2,12		3,8			0	0	1,1		1,1	1,1	/1,10	2,6	1,4	4,12	
Bendy	1.22			8,25	9,31	7,15	6,19	6,10	6,15		5,14		9,8	2,12	1,19			3,10	3,10		1,1	0	/0			2,5	1,5	2,14			/2,3	
Brown																				/0			/0		/1,1	1,2	/0	/0	/0	/0	/0	
Buckstaff	1.11	6,15	6,17	7,20	7,20	6,11	6,14	5,10	5,9	5,13	5,7	2,4	3,8	2,9	1,10	2,11	2,8	2,7	2,5		1,1				2,5	2,2			1,4	2,5		
Cragg	0.92	6,18	7,23	8,27		7,20	7,27	6,20	8,20	6,18	5,13	5,10	3,10	2,6	1,17	4,25	2,8	/2,3		/1,1	/1,1	0	0	1,1	3,6	1,2	1,5	1,5	1,5	0	2,10	
DeKinder	0.80	7,21	6,18	7,26	6,21		/5,14	5,7	5,8	6,7	5,6		3,6	2,7	1,13	2,11	2,5		2,2	2,2	0	0	0			1,1	1,1			0		
Elias	0.68	9,29			8,33	6,26	/6,24	7,31	7,31	6,17	6,23	5,18	3,7	2,17	2,19	4,24	2,12	3,11	5,12	2,2	2,7	0	0	1,1	3,9	4,8		2,11	/2,13	2,7	4,9	
Estremadoyro	0.80															4,26	4,10	4,15	3,14					1,2	4,17	4,14					6,19	
Evans		6,13	6,12	8,12	8,14	5,9	5,8	/4,14		5,9	3,4	3,5	/2,4				2,4	2,4	3,6			0		1,1	1,1	2,2		/1,4	/1,3	0	/1,1	
Koyama	0.70			7,27	9,42	9,57		7,29	8,47			6,18		2,17	2,22		2,16	3,18					0	0		3,8					2,4	
Lobbick	1.02	6,18			6,23	/5,14			6,18	5,12	4,13		2,11	2,15	1,16				/1,2	/0							1,1	/1,4		0		
Loehde		7,26	7,24	7,31	9,38	6,30		8,36	7,25	/5,11	4,8	3,8		2,12	3,16					2,2					3,10	1,1	1,7	1,4	/0		5,14	
Luft	0.58			8,35	7,32	7,28	6,29	7,22	8,28	6,27	6,27	-	...	2,17	2,19		2,19	2,11	3,10			0	0			1,2	1,4	2,18		2,11		
Fernald	1.02	6,15	6,20	8,25	6,19	6,14	8,18	8,12	/7,16	5,17			/2,5	/2,17	1,21		3,12			2,3	1,3		0	0		1,2	/1,1	1,7		0		
Maher	0.90	6,19	8,19		8,19	8,13	6,14		6,13	5,19		4,7	/3,9		2,10		3,10	3,9	2,5	/2,4	1,1	0	0	1,2	1,2	1,3	1,6		/1,4	0	2,6	
Mandrysiak		8,26	8,21	7,26	9,46	6,23	5,24	7,53	/5,22	4,9	5,16	4,12	/4,2	2,14	3,14		/0	1,2	2,7	/2,5					3,5	1,2	1,6	/1,2	/0	0	6,14	
Moore	0.76							7,22	8,20	7,21		—	3,7	2,12	2,16	2,19	2,12	4,15	2,6	4,9	1,4	1,1	/1,2			1,2	1,8		/3,7	3,9	4,15	
Olson	0.68			7,36	10,64	7,47	6,48	8,25	7,32	5,26			5,10	2,23	1,19		2,15	5,15	4,21	3,13		0	/0	1,1		2,7	/1,5	2,16		3,9		
Pierson	0.83					6,39			6,19	4,20				2,12				2,13	3,14			1,1				1,1						
Ellsworth	0.86	9,31	7,41	7,36	7,42	6,30	6,35	6,32	8,25	5,25	5,26	4,8	4,10	2,19		3,31	2,15	2,16	3,14	3,7	1,1	/0	0		3,14	2,6			1,15		3,9	
Kosebrugh	0.68	6,15		7,21	9,48	7,18	5,11	5,10	7,17	5,9	4,13		3,9	2,13	1,14	2,12	2,10	3,9	2,6		0	1,1	0	0		1,1	1,3	2,9	1,2	3,10	3,5	
Ruhge												3,7	3,7	2,9			2,8		2,3	/1,1			0		/2,4	2,3			/3,6			
Thomas	0.84	9,34	9,30	8,21	9,39	8,30	6,17		7,26	/5,11	6,14		3,8		2,12	2,20	3,11		2,6	/1,2	1,3	/0		1,1					1,4	0	2,8	
Thrussell	1.47	6,11	6,16	7,13	6,13	6,14	6,18	5,10	6,9	5,9			3,6	/2,6	2,9	2,16		2,7	2,4	3,9	1,3	/0	0	0	1,1				/0	1,3	1,1	
Trathen	1.20	/5,5	6,8	8,13	7,10	6,8	5,8	5,6	4,4	5,8	3,4	2,2	3,5	2,4	2,5	3,7	2,3	3,5	2,2	0	0	0	0	0	1,1	1,1	1,1	1,2	1,1		1,1	
Venter	1.20	5,9	5,9	7,15	7,16	6,10	5,9	5,9	6,12	6,10	4,8	3,4	3,7	2,7	1,6	2,9	/2,4	2,6	2,2	2,2	1,1	0	0	0	0							
Warren	1.10				4,7	5,9		2,5	2,4	2,4	2,3	1,3	2,5	1,7	1,9	1,4		1,3	1,3		0					0			0		0	
Wells				5,6	7,10		5,8			5,10			1,4										0		1,1							
Williams	0.92		6,17	7,18	6,19	6,20	5,17	5,14	6,15	5,9	3,6	3,6	3,8	2,10	1,11		2,8	2,6	2,5	2,3	1,1	0						1,3	0			
Womelsdorff			7,7	6,12	5,9			/4,4	5,15	6,11	5,11	3,7	2,5	2,9	2,15	2,14	2,11	2,8	2,5	2,2	1,1	0	0		1,1	1,1	1,4	1,10	1,3	1,4	1,1	
Ra'		85	86	96	92	83	75	69	78	67	53	38	36	30	27	38	30	35	29	28	9	3	1	4	23	15	12	20	12	15	31	
Rz		89	88	80	85	78	70	74	68	64	52	40	40	40	33	46	25	38	41	29	23	7	0	7	25	30	11	21	12	9	32	

/ OBSERVATIONS MADE UNDER ADVERSE SEEING CONDITIONS

NUMBER BEFORE COMMA INDICATES TOTAL GROUPS

NUMBER AFTER COMMA INDICATES TOTAL SPOTS

A AVSO

AMERICAN SUNSPOT NUMBER OBSERVATIONS

SOLAR DIVISION

MONTHLY MEAN $R_{A'}$ =23.2 July 1955 MONTHLY MEAN R_Z =26.0

OBSERVER	KL.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Adams	0.70	3,18	3,45		3,18	3,14	3,23	3,19	3,13								1,2	0		2,8	2,6	1,5	1,2							1,17	1,14	1,10
Beetle	1.06	3,13	3,16	3,22	4,25		3,20	4,43	3,23	3,8	3,5	0	4,12	4,15	4,12	2,4	1,1	1,1	0	4,12	5,15	2,7	1,2			0		1,5	1,10	1,6	1,23	
Bellmeyer	0.81		2,11	3,18	4,25	4,24	3,25			3,12				2,3	2,3			0		2,12		1,5										
Bondy	1.22	3,10		3,10							4,10	3,8	3,9	2,6	2,5	2,4	1,1	1,1	0	2,6	2,6	1,4	1,1	0	0		0	0		1,12	1,15	1,12
vonBronsart	0.84	3,13	3,27	3,27	3,18							0		2,12			1,3		0													
Brown						2,9		0	0	0						0				0	1,3	0		0		0				0	0	1,8
Buckstaff	1.11									2,7	3,8	1,1	1,4	1,3	2,5	2,4		0	0	2,6	2,6	1,3	1,1	0	0	0	0		0		1,10	1,9
Chassapis	0.74	3,8	3,12			3,18				4,18		7,17	3,12			2,4	1,1	0	0	1,6	4,8	1,4	1,2	0	0	0		1,5	1,5	1,10	1,13	1,12
Cragg	0.92	3,14	3,17	3,15	4,27	5,22	4,33	3,23	3,17		1,1	2,10	1,6	3,10	3,12	2,3	1,1	0	0	2,6	1,3	1,2	1,3	0	0	0	0	1,5	1,7	1,18	1,24	1,13
DeKinder	0.80								2,18	3,14	2,7		1,2		1,2	2,3			0		1,8	1,2	1,1	0	0	0	0		1,5	1,11	1,18	1,14
Elias	0.63	3,6	3,14	3,33	3,20	4,30	5,30	5,26	4,23	4,24	5,22	5,17	4,15	3,7	4,13	2,4	2,3	3,4	0	1,4	3,9	1,4	1,2	0	0	0	0	1,4	1,6	1,9	1,10	1,15
V.Estremadoyra	0.80																		1,2					0				1,4				
Fernald	1.02	2,10	3,18	3,11	2,14	2,11	2,22	3,28	3,20	2,12	3,10	1,2	2,4	1,4		0	0	1,3	0	3,7	2,6	1,4	1,1	0	0	0	0	0	0	1,11	1,17	1,17
Loebbick	1.02	2,11	2,13	2,14	2,22	2,22	2,26		2,9	2,8	0	0	1,5	1,5	2,4	2,4	1,2	0	0	1,4	1,5	1,2	0	0		0	0	0	0			1,7
Loehde		3,16		3,14	4,20	4,13	2,15	3,25		3,9	2,10	2,7	1,3	3,11	2,5	1,3	1,1	0	0	2,7		1,2		0			1,3		1,6	1,11	1,12	2,15
Luft	0.98	3,18	3,25	4,36		4,32	3,31	3,34	4,35	3,12	5,23	4,7	1,2	3,8	2,6			1,2	0	2,16		1,5	1,4	0			1,2	1,5				1,18
Macris	0.77	3,10	3,22	3,17	3,14	4,15	3,16	4,25	4,25	4,16	3,7	5,17	3,9	3,13	4,19	3,8	2,3	1,1	0	2,8	4,8	1,4	1,1	0	0	0	0	0	1,8	1,9	1,11	
Maher	0.90	3,13	3,15								1,4	0	1,5	2,8	2,4	2,3	0	0	0	1,4	1,4	1,2	1,1	0	0	0	1,1	1,4	1,7	1,6	1,12	1,12
Mandrusiak		3,18			3,21	4,25	4,24	5,33	2,15	3,10	4,17	1,6	1,3	2,9	2,6	2,3	1,1	0		2,6	1,4	1,4		0			1,5	1,6	1,10	1,13	1,12	2,17
Olson	0.68	3,27	3,27	3,29	4,35	4,31		4,53	5,70	5,40		5,27	6,26	5,12	5,14	4,8	3,12	1,1	0	2,13	6,20	1,5	2,5	0	0			1,6		1,25	1,29	2,24
Pierson	0.83	3,16				2,17	3,24		3,21																							
Pilsworth	0.86	3,18	3,18	3,20	4,32	4,32	6,40	5,44	3,22	3,11	4,18	3,17	4,14	4,11	4,18		1,1	1,1	0	2,13	5,18	1,4	1,1	0	0	1,1	0	1,6	1,11	1,17	1,23	2,26
Rosebrugh	0.68	3,16	3,17	3,19	3,18	4,17		3,26	3,15	3,12	3,9	2,2	2,6	2,7	2,5	2,3		0	0	3,9	2,6	1,6	1,3	0	0	0	1,3	1,4		1,9	1,10	1,11
Thomas	0.84	3,12	3,13						2,11		4,14	1,8	2,5		1,1	2,4			2,7	2,10	2,6	1,6	1,1	0	0			1,6	1,10			1,13
Thrussell	1.47	2,3	3,6		3,9	3,6	3,15	3,14	3,10	3,9	3,8		1,2	2,6	2,3	2,3	2,4	1,1		1,3	2,4	1,2	1,1					1,3	1,4			1,6
Trathen	1.28	2,2	3,4	3,4	2,3	2,5	2,9	2,7	2,5	1,4	1,2	0	1,2	2,2	2,3	2,2	0	0	0								0	1,1	1,1	1,3	1,4	1,5
Venter	1.28	2,2	3,4	3,5	2,4	2,4	2,12	2,9	2,7	0	3,9	2,2	1,1	1,1	1,1	1,1	0	1,1	0	1,2	0	1,1	1,1	0	0	0	0	0	0	1,4		1,6
Warren	1.10	1,2	2,5	2,5			2,5	2,6	1,3	1,2			1,1	1,2	1,3			0	0		0	0	0				0	1,1	1,2	1,3		0
Wells							3,11	3,14	3,10			2,3	2,3												0	0	0	1,2		1,7		
Williams	0.92	2,8	2,10	2,8	2,13	2,13		2,14	2,8		0	0	0	1,2	1,2	1,1		0		1,3	1,3	1,1			0	0	0			1,5	1,8	1,8
Womelsdorf		2,9	2,15	3,14	2,18	2,8	2,11	2,12	2,10	2,9	0	0	1,1				0	0	0	0		1,3	1,1	0	0	0	0			1,6		2,9
$R_{A'}$		35	42	42	46	45	51	55	42	22	35	18	21	27	28	20	10	7	1	25	27	14	11	0	0	1	2	10	12	17	22	21
R_Z		35	38	38	43	48	60	47	47	39	41	35	25	25	37	29	22	20	7	26	32	11	9	0	0	8	8	11	12	16	20	26

/ OBSERVATIONS MADE UNDER ADVERSE SEEING CONDITIONS

NUMBER BEFORE COMMA INDICATES TOTAL GROUPS
NUMBER AFTER COMMA INDICATES TOTAL SPOTS

NOTE: $R_{A'}$ STANDS FOR AMERICAN RELATIVE SUNSPOT NUMBER. $R_{A'}$ IS COMPUTED FROM OBSERVATIONS MADE BY MEMBERS OF THE SOLAR DIVISION – AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS. $R_{A'}$ IS COMPUTED FOR THE NATIONAL BUREAU OF STANDARDS.

R_Z STANDS FOR ZÜRICH PROVISIONAL RELATIVE SUNSPOT NUMBERS AND IS DEPENDENT ON OBSERVATIONS MADE AT THE FEDERAL OBSERVATORY IN ZÜRICH /SWITZERLAND/ AND ITS STATIONS IN AROSA AND LOCARNO.

THE WOLF RELATIVE SUNSPOT NUMBER R IS BASED ON THE FORMULA:

$R = K/10G + F/$ WHEREBY K STANDS FOR THE OBSERVATORY COEFFICIENT, G THE TOTAL NUMBER OF GROUPS, AND F IS THE TOTAL NUMBER OF SPOTS /UMBRAE/

A AVSO

AMERICAN SUNSPOT NUMBER OBSERVATIONS

SOLAR DIVISION

MONTHLY MEAN $R_{A'}$ = 36·6 — August 1955 — MONTHLY MEAN R_Z = 40·2

OBSERVER	KL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Adams	0.70					2,10	2,22	2,20		4,56	4,42	4,46	4,39	4,28	3,27		3,5	1,2	1,5													
Beetle	1.06	1,12										4,66		4,26		2,9	3,8			1,9	1,12	1,15	2,14	1,5	0			3,38	4,34	5,19	5,26	6,29
Bollmeyer	0.81	1,12	1,6																			1,14					2,15			4,5		
Bondy	1.22		1,5			2,12	3,33			4,58				4,18	3,16				1,12		1,5	1,8	2,12		1,4				4,17			
Brown							2,20	2,31	2,30	4,36		4,27	0	4,14	2,13		1,2	1,6		0	0	1,7	0	0		1,7		0	5,17	4,13		
Buckstaff	1.11	1,8	1,2		0	2,8	2,15	2,28	2,30	2,31	4,32	4,18	5,30	5,29	5,29	3,3	4,4	1,1	1,5	1,8	1,8	1,8	1,6	1,3		1,5	3,13	3,18	4,15	4,5	4,11	7,17
Chassapis	0.74	1,9	2,11				3,20	2,33	2,54	4,54	4,57	4,59	4,41		4,19		3,6		1,4	1,8	1,9	1,14				1,8	2,15		5,32		4,15	
Cragg	0.92	1,9	1,4	1,2		2,14	2,34	2,51	2,54	4,93	4,66		4,46	4,28	4,15	4,12	2,5	1,4					2,20		2,2	2,12	3,22	4,26	5,19	5,19	5,17	8,19
DeKinder	0.80	0	1,6	0	0	2,11	2,22	2,21	2,29	4,54	4,44		4,22		3,23	0	2,4	0	1,3	1,5	1,5	1,9	1,7	1,4	0	1,8	2,14	3,23	4,18	4,10		7,23
Elias	0.69	2,18	2,17	2,8	0	3,4	3,14	3,37	2,50	4,65	4,87	4,75	4,51	4,31	5,38	4,17	3,5		1,4	1,8	1,7	2,15	2,12	2,5	1,3	1,7	3,17	4,38	4,38	5,15	5,14	7,25
Estremadoyre	0.80	4,17	2,11							3,28				4,22								1,8										
Evans		1,5		0	1,2	3,10	3,12		2,20	4,25	4,22	4,16	4,14											0	1,3	1,5	2,5	2,8	4,13	5,11	5,12	6,12
Fernald	1.02	1,11	1,5	0	0	2,7	3,21		2,33	4,67	4,55				3,9	3,3	4,4				1,7	1,9	1,9	1,2	0	2,6	2,7	3,28	6,19	6,14	5,14	
Focas	0.60			2,5		3,7		3,47	4,56		4,66	4,41	4,50	4,25	4,20					1,13	1,7	2,13	1,8	2,5	1,3		2,17	4,36	4,36	5,36	5,18	6,22
Loebbick	1.02	1,8	0	0		2,7	2,24	2,22		3,39		4,34			3,17			0		0	1,8	1,8	1,10			1,7	1,6		2,13			3,22
Loehde		2,12	2,7	1,1	3,4	3,17	2,33		4,39	4,63	4,57	4,45	4,30			2,4	0	0	0	0		1,6	1,4	0		1,5		2,8	4,14	3,9		7,26
Maher	0.90	1,11	1,3	0	1,1	2,10	2,22	2,29	2,36	4,51	4,53	4,45	4,29		3,18	3,7	3,7	1,2	1,7	1,7	1,9	1,9	2,9	1,3	0	1,8	2,17	3,28	5,27	4,14		6,14
Mandrusiak		2,11	2,9	2,2	3,9	3,21	3,30	2,16	4,48	4,73	4,60	4,45	4,42	4,26	4,19	3,8	2,3	1,8	1,9	1,7	1,9	2,10	2,14	1,3	1,4	1,10	2,22	4,24	4,21	5,15	4,18	7,38
Olson	0.68	2,24	2,13	2,5	2,3	2,13			3,56	4,86	4,72			5,29	4,19	3,10	2,7															
Pierson	0.83	1,8	1,6	2,5						4,45					3,23						1,5	1,9						4,25	4,23	5,20		
Pilsworth	0.86	1,17	1,7	1,3	0	2,19		3,43	3,65	4,89	4,79	4,58	4,66	5,31		3,8	3,6	2,4	1,14	1,16	1,9	2,17		1,6	0	1,8		2,38	4,29	5,30	5,28	6,37
Rosebrugh	0.68	1,9	1,4	1,2	1,3	2,6	3,25	3,24	2,50	4,44	4,33			3,12	3,19	4,9	3,7	0		1,8	1,7	1,8	1,6	1,3	1,4	1,9	2,10	4,24	4,21	4,14	4,10	
Thomas	0.84	1,8	2,11	1,2	1,1	2,14	3,30	3,30	2,44	4,62	4,49	4,45	4,35	4,41	4,16	4,15	3,6	1,3	1,9	1,8	1,8	1,11	2,19	1,2	1,6	1,12	2,15	4,33	4,29	5,19	5,29	8,34
Thrussell	1.47	2,7		0	0	2,4	2,14	3,25	4,26		4,24	4,15	4,19			3,4	2,3	2,3	1,5			1,6			1,5	1,6	2,9	4,17		5,7	6,9	7,19
Trathen	1.28	1,4	0	0	0	1,3	2,11	2,13	2,15	4,21	4,14	4,10	4,8	3,5	3,5	2,3	1,1	0	0	1,3	1,4	1,4	1,4	0	0	1,4	2,4	3,10	3,7	4,7	3,7	4,10
Venter	1.28	1,7	1,5	0	0	0		2,13	2,22	4,38	4,24	4,24	4,17	3,12	3,12	2,3	2,3	0			1,4	1,5	0	1,3	0	1,2	1,2	2,15	4,18	5,10	3,7	3,4
Warren	1.10					1,5		2,10	2,23	4,25		4,17		2,3	2,3	0				0					0	1,5	1,3		1,8			2,6
Wells			1,2	0			2,11		2,23	5,33	5,33											1,6			1,2			4,16		3,6		2,4
Williams	0.92		0	0						3,35	4,38					2,6	1,3				1,6	1,10	1,6		0	0	1,7	2,17	4,17	4,12		4,16
Wamelsdorf		2,8					2,17	6,17	8,22		5,24	4,25	3,19	4,20			3,3	0	0	0	4,8	4,9	0	0	0	2,4	4,7			3,4		
$R_{A'}$		23	10	5	3	25	43	48	58	78	78	76	70	53	45	32	30	12	15	14	16	19	20	11	11	16	26	54	55	59	61	75
R_Z		25	20	16	0	26	46	61	77	83	87	85	77	77	60	44	28	16	10	13	17	22	23	23	14	11	26	40	54	55	49	62

/ OBSERVATIONS MADE UNDER ADVERSE SEEING CONDITIONS

NUMBER BEFORE COMMA INDICATES TOTAL GROUPS
NUMBER AFTER COMMA INDICATES TOTAL SPOTS

AMERICAN RELATIVE SUNSPOT-NUMBERS R_A, for SEPTEMBER and OCTOBER 1955

Day	Sep.	Oct.	Day	Sep.	Oct.	Day	Sep.	Oct.	Day	Sep.	Oct.
1..	85	32	9..	67	69	17..	35	0	25..	15	95
2..	86	54	10..	53	61	18..	29	0	26..	12	102
3..	96	69	11..	38	64	19..	28	15	27..	20	92
4..	92	68	12..	36	43	20..	9	26	28..	12	97
5..	83	61	13..	30	36	21..	3	30	29..	15	120
6..	75	53	14..	27	10	22..	1	47	30..	31	109
7..	69	82	15..	38	6	23..	4	57	31..	......	107
8..	78	64	16..	30	0	24..	23	81			

September Mean R_A' = 40.7   October Mean R_A' = 56.5

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ZURICH PROVISIONAL SUNSPOT-NUMBERS R_Z for SEPTEMBER and OCTOBER 1955
Dependent on observations at Zürich Observatory and its stations in Locarno and Arosa.

Day	Sep.	Oct.	Day	Sep.	Oct.	Day	Sep.	Oct.	Day	Sep.	Oct.
1..	89	37	9..	64	79	17..	38	0	25..	30	95
2..	88	54	10..	52	56	18..	41	0	26..	11	107
3..	80	58	11..	40	55	19..	29	11	27..	21	98
4..	85	64	12..	40	61	20..	23	21	28..	12	108
5..	78	62	13..	40	41	21..	7	31	29..	9	119
6..	70	60	14..	33	22	22..	0	42	30..	32	124
7..	74	71	15..	46	7	23..	7	57	31..	......	123
8..	68	71	16..	25	0	24..	25	86			

September Mean R_Z = 41.9   October Mean R_Z = 58.7

* Prediction concerning sunspot-maximum.
* Dr. M. Waldmeier's latest communication carries the following news:
*
* "The coming sunspot-maximum will be one of outstanding intensity.
** The highest smoothed monthly relative-number will be about 150,
*** or even larger. Therefore the coming sunspot-maximum is likely to
** surpass all the sunspot-maxima hitherto observed. The maximum
* sunspot-activity will be reached in the middle of 1957."
*
* Dr. Waldmeier predicted for the last cycle (18th) $\bar{R}_{Max.}$ = 139 for
* 1947.6. The actual $\bar{R}_{Max.}$ was 151.8 at 1947.5.

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N E W B O O K S about T H E S U N :

THE SUN AND ITS INFLUENCE by M. A. ELLISON

Its subtitle is: "An Introduction to the Study of Solar-Terrestrial Relations". Dr. Ellison of the Royal Observatory, Edinburgh, is one of the foremost authorities on solar-terrestrial relations and in particular on solar flares and their effects. This is a most lucid book on solar phenomena with many fine drawings and photographs. As a student of solar astronomy I cannot recommend it too highly. Our forthcoming BULLETIN will carry a detailed review.

hlb

(continued from page one "Probable causes...")

If we take into consideration that the temperature of granules is 160° - 300° C higher than the rest of the solar surface (6, 7), it follows that during the period of maximum solar activity when the number of granules is greater, there will be a greater emission of thermal radiation, while during the period of minimum the reverse will occur. Evidently the value of he solar constant will be affected by this change.

Moreover the brightness of the corona will be affected by the same cause, in view of the fact that the amount of energy emitted from the granules during the maximum will be greater than that emitted during the minimum.

According to Schwartzschild (8) the high kinetic temperature of the corona is probably produced by a stream of acoustic waves emitted from the photospheric granulation and conveying mechanical energy through the photosphere which is transformed into thermal energy in the highest layers of the chromosphere and in the corona.

It is to be noted that in the respective formula given by Schwartzschild in his paper, the total number of granules N is taken as constant. In such case the amount of energy emitted by the granules must be constant. However in our opinion (1) the number of granules N is varying with solar activity and consequently the amount of energy emitted by the granules must also vary.

In addition lately Abbott (9, 10) has shown that the absolute brightness of the corona is varying with solar activity. A similar variation of the temperature of the corona is given by Waldmeier (11).

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(written in September 1955)