THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS

Solar Division BULLETIN

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SOLAR-WEATHER SEMINAR AT BOULDER

Last summer many of the country's top solar astronomers and meteorologists met at the High Altitude Observatory of the University of Colorado at Boulder for a seminar on solar-weather relationships. This seminar, cosponsored by the American Meteorological Society and supported by the Observatory and the National Sciency Foundation, was held from June 18th to July 24th, 1956. Immediately after this seminar the American Meteorological Society held its 146th national meeting at Boulder, also devoted to the sun's influence on the Earth's weather. At the end of the seminar the scientists present prepared as a joint effort a list of conclusions drawn from the conference. A few of the most interesting of these are quoted below:

1. The Sunspot Number is a valuable but crude index of solar activity.

2. Sunspot Numbers can be expected to correlate positively with overall solar ultraviolet radiation and, in years near sunspot maximum, with corpuscular radiation.

3. No variations of visible solar radiation greater than 0.3% of the solar constant (the present observational error) have been established.

4. Corpuscular radiation may reach orders of magnitude of about a solar constant in limited areas of the auroral zone.

5. Corpuscular radiation (excluding cosmic rays) has not been observed below 60 km.

6. Far-ultraviolet radiation has not been observed below 50 km.

7. Many mechanisms have been suggested which could propagate energy derived from anomalous solar corpuscular or ultraviolet radiation from 50 km or above to the lower stratosphere or troposphere (where the weather occurs). So far no conclusive evidence has been provided as to which, if any, of these mechanisms operate.

(continued page 2)

(Solar-weather seminar at Boulder - continued from page one)

8. Under certain conditions the circulation of the atmosphere may be sufficiently unstable to be greatly modified by relatively small solar effects.

9. There are many suggestive empirical solar-weather relationships which merit further critical and physical evaluation.

10. Effects of variable solar activity in producing anomalous secular and climatic weather changes are suggested; further research will be needed to establish the reality of these effects and whether the changes are practically important and the degree to which they can be predicted.

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DISCUSSION OF PREDICTION OF NEXT SUNSPOT MAXIMUM
by Leith Holloway *)

My prediction $\bar{R}_A$ Max. = 196 and the epoch of maximum at 1957.25 (around April 1, 1957) was given in a pepr read at the May 1956 meeting of the AAVSO and printed in the Solar Division Bulletin, numbers 115 and 118 (March and June 1956) is reconsidered in the light of recent sunspot data. Since the Smoothed American Relative Sunspot Numbers ($\bar{R}_A$) are rising according to prediction very closely along the line having a slope of 8 spots per month and crossing the axis (zero level) on March 1955 (11 months after minimum of April 1954), it is concluded that the above prediction needs no revision at this time. A comparison between predicted and available smoothed numbers follows:

	Month	Predicted $\bar{R}_A$	Actual Observed $\bar{R}_A$
No	November 1955	64	65
	December	72	73
1956/	January 1957 6	80	80
	February	88	89
96/	March	96	99

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*) This paper was read by Mr. Holloway at the Pringfield Meeting of the AAVSO last October.

Ed. note: Most recently Mr. Holloway wrote in a letter to me: "Looks like my prediction of maximum is actually falling lower than observed now. I never expected THAT to happen- but rather the reverse if anything." Well, c'est le soleil, if you wish. My own "prediction" (SD Bull. #113) of $R_{MAX} \sim 180$ at 1957.3 was coupled with a remark "It is hard to believe that we should witness such unprecedented activity". Prof. Waldmeier's original prediction of $\bar{R}_{Max.} = 170$ at 1957.1 was most recently raised to 181 at the same epoch. The National Bureau of Standard's prediction based on the method of McNish and Lincoln so far reaches to 194 for May 1957!

"Here and there within the Solar Division..."

Ever since I joined the Solar Division-AAVSO, I was eager to meet our observers personally. Though maintaining an extensive correspondence (even if, regretfully, coupled with great delays), I am convinced that personal contact is most helpful. Alas, it is impossible for me to meet all our friends. In recent years I had to go on many trips (mostly installing machines for my boss) and thus I had a chance to meet many members. This chance is the "silver lining" of my being away..

It all started back in 1950 when my "pilgrimages" to Neal J. Heines in Paterson (30 miles away) commenced. Then, sometimes during the summer of 1951, I paid my first visit to David W. ROSEBRUGH in Meriden, Conn., (100 miles away). I still remember that bright Sunday when I came to Dave's home. We spent together a very busy day in discussion and with his three telescopes. The hours passed on their lawn, around an outdoor table and a delicious meal prepared by Mrs. Rosebrugh and Dave, the barbecue-chef, like a zephyr. Since then I see Dave at least once a year.

Next, I roamed to West Chester, Penna., to see George R. WARREN (120 miles away). Again, I had a wonderful time in their large rustic home. George is a "maker" of things. Between his tower-observatory, his shop /where telescopes, radios, photographic work and numerous other things are made/ and the sun, we covered a lot of territory.

To reach further away, I had to pull on my "silver lining" and when I had to go to Montreal, I made sure to see Frank DeKINDER. So it was possible for me to admire Frank's fine dome-observatory built with his own hands and those of their beloved, late son. We also went to see the Montreal Centre of the R.A.S.C., where I met the current president, Charles M. Good. (Here too will take place the spring meeting of the AAVSO). On this trip I was also able to "hop over" to Ottawa and visit Mr. A.E. Covington and his solar radio-observatory.

On another trip "south" I stopped over in Baltimore, Md., to see James C. BARTLETT, Jr.. Together we discussed topics ranging from the Civil War, the philosophy of religions to "color-in-sunspots". Most of all, however, I was impressed by Bartlett's detailed records of his observations. I have never seen more complete records kept anywhere, by anyone. His astronomical observations cover the moon, all planets and the sun. Bartlett is gifted with an exceptionally fine color perception and, I should add, that he is interested in almost all fields of science.

Subsequent trips /not necessarily in chronological order/ brought me to Memphis, Tenn., where I met Willian E. RAINE and also the local astronomy club, where I gave a talk on the sun (later on I became an honorary member of their club --see, it pays to travel). Bill Raine built his own 6" reflector and a long-focus (54') horizontal solar-telescope, which he hopes to have in action soon.

While in Kansas City, Mo., I met Mark KINSEY and also the active committee of their astronomy club. (They will be host to the next Astronomical League convention).

From here I jumped /by plane/ to Manhattan, Kansas, and right into the lap of Walter Scott HOUSTON. Here I tarried for an unforgettable and lovely evening, night and morning with Walter, Miriam and their three daughters. "Deep-sky-wonder-Walt" edits and publishes (with the help of

his whole family, not unlike hlb) the "Great Plains Observer". This is by far the most witty bulletin I know of - it is gallic, pardon me, mark-twainian in originality, permeated with humor and serious work by amateurs. To give you an idea of Walter's deep-sky magic I cite here his sorcery of placing Omega Centauri clasped by the horizon so that I could stare at it with binoculars!

On my tour to Chicago, I detoured to Oshkosh, Wisc., to spend a weekend with the Buckstaffs. Ralph N. Buckstaff has an excellent 3-dome observatory, a fine astronomical museum and one of the most complete astronomical libraries in the States. Here I not only learned more about astronomy but also to recognize the Red-winged Blackbird and thus got caught by the fancy of bird-lore.

When I reached the West coast (having paid homage to the Great Mississippi, the Rockies from the air and now the Pacific), I could not wait to visit Thomas A. Cragg. Though only in Seattle on business, I made sure to reach Los Angeles. A most hectic weekend followed in the cordial home of Tommy's parents, in Pasadena, The Mountain /Wilson/ and the Griffith Observatory. I acted like "questioning Janus" and gorged myself like Bacchus.

More recently I stopped in Edmonton, Alberta, Canada, on my way to Vancouver, B.C., to meet Franklin Loehde and his friends. We discussed a lot of things and I also visited their local observatory. Later on I went to Victoria, B.C. to visit Robert S. Evans. We tried to observe, between clouds, the lunar eclipse, and saw a bright aurora. Bob has two observatories - one has his solar telescope and a Questar, the other is in construction /an Astrodome/. He is also an ardent camera-man. Before returning home /via Seattle/ I saw "Our Mr. Sun", Frank Capra's lively TV program.

Besides the above named observers I was able to meet many others, usually at conventions. Thus I met briefly Edward H. Pilsworth of Battle Creek, Mich., at the McMath Hulbert Observatory during a meeting of the AAS, and Robert M. Adams of Neosho, Mo., at an AAVSO meeting in Pittsburg. I was fortunate to meet also Hans Arber of Manila, Philippines, when he paased through New York on his trip to Switzerland.

These all too brief sketches can give you only a vague idea about these "get-to-gethers". They may show you how many fine friends we have and also that the Solar Division is not a mere paper body. As you know, I can devote only my free time to the Solar Division. Unlike my predecessor, I cannot, regretfully, write notes on every occasion to our members. Still, I wish to thank all of you for your cooperation and wish you a sunny New Year,

sincerely yours,

Harry L. Bandy

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A new edition of a fine book on the sun is to be published soon by The Macmillan Co., namely GEORGIO ABETTI's "THE SUN" as translated by J. B. Sidgwick. The previous edition of 1938 was quite a success here and abroad.

SOLAR DIVISION OBSERVERS DURING 1956.

The following Solar Division members participated in our "Sunspot-Number" program. The observations of our standard observers (marked with an asterisk) form the basis of the American Relative Sunspot Number R_A, computed for the National Bureau of Standards. (The number following the name refers to the number of monthly reports)

Adams* 12
Arber (philippines) 7
Beardsley 6
Beetle* 12
Bollmeyer* 2
Bondy* 12
Brennan* (Australia) 6
von Bronsart (Germany) 11
Brown (Canada) 8
Buckstaff* 12
Caimi (Greece-new) 2
Chassapis* (Greece) 6
Cragg* 12
Cruikshank (new) 3
DeKinder* (Canada) 12
Elias* (Greece) 12
Estremadoyro V.* (Peru) 12
Estremadoyro G. (Peru) 1
Evans* (Canada) 12
Fernald* 12
Hicks (new) 2
Itabashi (Japan) 12
Koyama* (Japan) 5
Loebbick* 10
Loehde (Canada) 12
Luft* 12
Macris* (Greece) 2
Maher* 12
Mandrusiak (Canada) 12
Martens (new) 1
Moore * 12
Nicolini (Brazil) 10
Pierson* 1
Pilsworth* 12
Pritchet (new) 2
Raine (new) 1
Rosebrugh* 12
Ruhge 5
Seely 2
Thomas* 12
Thrussell* (England) 12
Trathen* 12
Venter* (South Africa) 12
Warren* 7
Wells 12
Womelsdorf 12

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The following observers participated in the study of "Assymetry of Sunspots" (East versus West distribution of spots across the solar disc) for Prof. W. Gleissberg, Istanbul, Turkey.

Beetle 12
Bollmeyer 2
Cragg 12
Elias 12
Estremadoyro V. 12
Estremadoyro G. 1
Farnsworth 12
Fernald 12
Pierson 1
Rosebrugh 12
Thomas 10
Trathen 12
Wells 11
Pilsworth 12

The Solar Division-AAVSO is grateful to all the above named observers for their cooperation and devotion. Many others of our members are active in in one form or other in solar astronomy and to these too go our thanks.

Harry L. Bondy

AMERICAN RELATIVE SUNSPOT NUMBERS R_A' for September, October, November 1956.

day	September	October	November	day	September	October	November
1	147	154	153	16	230	100	170
2	157	184	176	17	222	89	161
3	133	207	169	18	210	95	150
4	121	197	183	19	209	104	145
5	116	140	209	20	215	113	143
6	137	142	254	21	175	125	121
7	141	163	287	22	129	162	131
8	128	150	265	23	128	134	95
9	113	139	207	24	132	124	104
10	123	160	225	25	130	128	120
11	160	143	224	26	150	143	126
12	205	159	178	27	110	124	126
13	222	133	180	28	110	133	155
14	249	115	177	29	117	157	180
15	245	94	221	30	121	164	157
				31		162	

Monthly Mean R_A' for September: 159.5
October : 139.9
November : 173.1

Correction: The monthly mean R_A' for July was 117.9 and not the figure given in our Bulletin Nos. 121-122. Please correct your copy. The number of sunspot groups observed daily at Mt. Wilson Observatory for August 18 was 18 and not 8 as erroneously printed. We are indebted to Mr. Maher for the former correction and to Mr. Loehde for the latter one.

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ZURICH PROVISIONAL SUNSPOT NUMBERS R_Z for September, October, November 1956.
Dependent on observations made at Zürich Observatory and its stations in Locarno and Arosa.

day	September	October	November	day	September	October	November
1	168	170	157	16	253	104	236
2	158	183	175	17	250	90	231
3	136	192	187	18	219	106	180
4	138	195	198	19	228	126	178
5	146	192	220	20	240	145	180
6	168	160	274	21	216	150	183
7	176	160	321	22	153	155	154
8	174	189	295	23	139	126	165
9	161	198	242	24	125	167	175
10	136	189	236	25	132	173	190
11	175	166	256	26	136	160	130
12	208	175	262	27	131	154	122
13	244	170	205	28	127	162	115
14	280	121	205	29	172	187	164
15	276	108	246	30	201	216	198
				31		195	

MEAN R_Z for:
Sept.:182.2
Oct.:160.8
Nov.:202.7