

A.A.V.S.O.

SOLAR DIVISION BULLETIN.

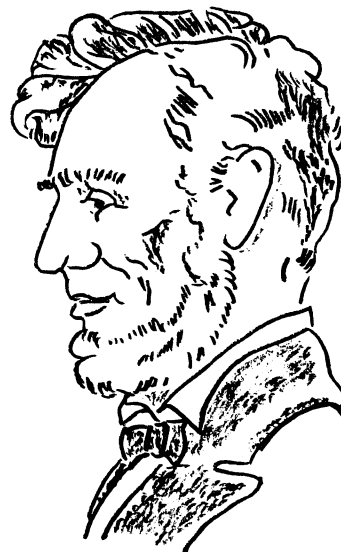
Neal J. Heines, Editor.

January and February 1952.  
Numbers 70 & 71, Page 190.

560 Broadway.  
Paterson 4, N.J.



HE HAD NO PLACE  
FOR IDOLENCE.



HIS ORIGIN WAS OF  
THE HUMBLEST.

The eighth year of A.A.V.S.O. Solar Division activity finds us in the waneing portion of the Eighteenth Sun Spot Cycle. We find sunspot-belt activity shifting in its normal phase. True, there have been some very interesting larger-than-normal groups, existant, and it may well be that such groups could make thier appearance during the mid-portion of this phase of the cycle. Waldmeier, Gleissberg and others have predicted that the coming munimum would reveal higher than normal activity, and, that the minimum would be of short duration.

1952 has already brought us a valuable book. The title of which is "A CONCISE HISTORY OF ASTRONOMY" by the Editor of, "The Journal of the British Astronomical Association". Mr. Peter Doig, F.R.A.S. This work contains some very interesting solar information, a little of which is quoted here. The book is published by Chapman and Hall, and can be purchased from the New York Publishers; Philosophical Library, through your own dealer. The proce is \$4.75. This work should be in your library. It covers the periods from, "The Oldest Astronomy", "Astronomy Of China, Egypt, Mesopotamia, India; Greece, Mohamedans, Tartars, and Medieval Europe, in three sections, then, beginning with Copernicus, Brahe, Kepler, Galeleo, Newton periods follow the Eighteenth Century, through Herschel. It then covers the first half of the 19th; Century, the second, and terminates with the 20th; Century, to date.

"The latter portion of the book contains essentially a brief survey of

the present state of the subject" , also included is an interesting "Foreword" by H.Spencer Jones, Astronomer Royal Of England.

#### QUOTED SOLAR ITEMS.

" By means of sheet-metal paraboloids, or suitably spaced antennas, radiations of several meters wave-lengths have been detected which appear to come most strongly from the direction of the richest Milky Way Star clouds, while very strong radiation of the same order of wave length has also been noted coming from sunspot areas at times of great Solar Activity".

" Solar research has been among the most active of all departments of Astronomy during the present century".

#### NOTES, on Selected Findings.

Strong magnetic fields around sunspots.

Magnetic Polarity, with opposition between northern and southern Hemispheres.

Ascending gasses of sunspots register 2000 degrees cooler temperature than the surrounding area of the sun, caused by rapid expansion. This cooling is also responsible for the relative darkness of the spot area, as well as for the formation of chemical compounds like TITANIUM OXIDE.

#### GRANULATIONS.

Form, and dissipate, and continuously change their shape.

Within a few seconds they alter noticeably; lose their identity in a matter of minutes. Diameters range from 400 - 1200 miles; average distance between edges is approximately 900 miles. The total number on the sun at one time exceed  $2\frac{1}{2}$  million.

#### SOLAR FLARES.

Light gases such as hydrogen-helium-calcium which extend high above the solar surface are greatly disturbed over sunspots. Clouds, sometimes as large as the spots themselves, formed of these elements, become exceedingly bright, and in a few minutes they "FLARE" up, fading usually after about 20 minutes to one-half hour durations, up to three to four hours duration and have been observed, accompanied by disturbances in the earth's magnetic Field. This is believed to be due to a blast of ultra violet light that on striking the earth's atmosphere changes the Ionosphere, (the ionized region of the upper atmosphere responsible for the reflection and transmission of short-wave radio) so that it does not act. Twenty-five to twenty-six hours later there then usually follows a magnetic storm, and, possibly Aurorae. This is thought to be due to a stream of electrically charged particles issuing from the area of the flare, taking much longer to reach the earth than the inertia of the Ultra Violet light. Out of 600 Flares, five were found where no spot existed at the time. Hale by the Zeeman effect discovered the existence of areas with magnetic polarity where no spot was visible, but, where spots had previously existed.

Flares are found most commonly at Sunspot Maximum, and usually in the middle part, of the life of a large spot.

### LAYERS.

Above the photosphere is found the Reversing Layer which is several hundred mile deep. Above the Reversing Layer is found the Chromosphere which is five to ten-thousand miles deep, it is in this layer that is found the Hydrogen, Helium, and, Calcium gasses.

### PROMINENCES, Ordinary.

They rise above the Chromosphere. Occur mostly twenty-five degrees north and south of the sun's Equator but occur on all parts of the Sun. Gradually appear at higher latitudes after sunspot maximum

### PROMINENCES, Eruptive.

Appear only in sunspot belts and are usually connected, with sunspots, or, in the disturbed area around sunspots.

Height: (known) One million miles above the sun's surface.

Velocity ; One-hundred to two-hundred and fifty miles per sec.

Occurance: Twenty-five to fifty during the minimum portion of the sunspot cycle, to, Four Hundred during the maximum period, per year.

### SPICULES. Dr. Walter Oor Roberts.

First appear as bubbles and from one to two minutes, burst and shoot upwards into small luminous extensions.

### CORONA.

Some streamers of the Corona have been measured, and found to be six-million miles long. Change of shape, (outside boundaries) varies with the sunspot cycle; Rotates with the Sun; There is a magnetic relationship between its activity and the sun.

### TEMPERATURE. (Surface)

At center	6,300	degrees K.	(Centigrade Absolute)
At limbs	5,000	"	"
Sunspot	4,000	"	"

### ORIGIN OF SUN'S ENERGY. (Theoretical).

Helmholst: Contraction and Expansion.

Present: Carbon an Proton-Proton Cycles.

### Note:

The above information is here presented to the newer observers, as well as to others interested in solar activity.

### Additional Reading References;

"OUR SUN" (Harvard Series) Dr. Donald H. Menzel.

"SONNE UND ERDE", Prof. M. Waldmeier.

"THE SUN" Dr. G. Abetti.

( And Others)

It becomes time again to check with the observers of the A.A.V.S.O. Solar Division observers to determine if each of you have received your MEMBERSHIP PLACARD. If not we will be pleased to forward same at an early date. Kindly notify this office.

We acknowledge a gift from Dr. Anne S. Young, former Director of the Williston Observatory, Mount Holyoke College, a Brochure from Mount Wilson and Palomar Observatories titled "FRONTIERS IN SPACE". This is a very interesting work. It's contents are; ASTRONOMY AND ITS TOOLS: WHAT IS A TELESCOPE?; TELESCOPE TAKE PICTURES; THE ENEMIES OF TELESCOPES; THE TELESCOPES DOMAIN; THE STORY OF MOUNT WILSON; THE STORY OF PALOMAR; A NIGHT'S WORK; QUESTIONS IN THE STARS.

Mr. T. P. Maher of Heppner, Oregon, forwarded to us "REPORTS ON THE TOTAL SOLAR ECLIPSE OF August 7, 1869. This was also a gift, but destined for the AAVSO Solar Division Library. In it is found some very valuable information concerning eclipse procedures of that time, descriptions of Instruments, accessories, illustrations of the sunspots which were visible at that time, solar prominences, the higher mountains of the moon as viewed against the sun, as well as many other items of interest. After complete review here it will be forwarded to the A.A.V.S.O. Headquarters for loan.

#### NOTE TO OBSERVERS.

We seriously request the observers to comply with our previous request concerning additional information to be entered in Column "D" of the Monthly Report Form. As you know we do not include observations in the Final Reductions Summary that are reported as being above "F - 5". However, it some times happens that the sky is covered with thin "cirri" type clouds which would result in an entry in column "D" as being "F", 6-7-8- or 9. I have made a study recently dealing with this situation, in which some of the Standard observers include the requested addition, in column "D", G - S when this cloud cover exists. In comparing the "R" values, of those who do comply, with those who do not, under similar conditions, and on the same date, it was discovered that the "R" values were quite similar. The observations, then, of those who not comply, could not be used. With the geographic locations of the observers, as they exist today, we still are in need of more observations during the bad-weather seasons, and every observation counts. Kindly enter the G - S, when these conditions prevail.

#### ERRATA.

In Bulletin Number 68, of November 1951, on page 185, in the 10th, line, change the word "July" to August. We are indebted to Mr. T. P. Maher for pointing out this error.

#### STATISTICS.

The total number of observed groups for the month of	Nov.	was-----	19.
" " " " " " " "	Dec.	-----	17.
Zurich's Provisional sunspot number	Nov.	----	53.0.
" " " " " " " "	Dec.	----	45.1.
The mean monthly sunspot area (U.S. Naval Obsvty) for	Jun.	----	2425.
" " " " " " " "	FOR Jul.	----	866.

## STATISTICS. (Continued).

The highest sunspot number as assigned at Solar Division Headquarters on December 31st., 1951 was 240. Its location was five days east of the Central Solar Meridian, in the south belt. For January 23rd., 1952 it was 13, in the same position as above but in the north belt. We were clouded out on the 22nd., of January so the entrance over the east limb probably occurred on the 21st., of January.

Predictions of Smoothed Monthly Sunspot Numbers for the next six months are as follows;

1951	Dec.	58	Mar.	50
1952	Jan.	54	Apr.	48
	Feb.	52	May.	46.

Same as above,

Jan.	54	Apr.	47
Feb.	52	May.	44
Mar.	50	Jun.	42.

Released by Prof. M.Waldmeier, Director, Federal Observatory, Zurich, Switzerland, and transmitted by the Swiss Broadcasting Corporation.

Naked-eye sunspots were observed by members of the Montreal Centre, R.A.S. Canada, as follows;

<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>
8-9-10-11-12th.	12-13-14-15-16th.	9-10-11-12th.	19-23-24th.

### Observers participating.

Venor	Venor	Venor	Venor
Scott	Scott	Wright	Scott
De Kinder	De Kinder	Zorgo	Wright
Wright	Zorgo	Scott	Zorgo.
		Stevens	

## PUBLICATIONS.

1. "A Two-Energy Solar Model"----- I.Epstein.  
Astrophysical Journal. Vol.114, Nov.1951, pp.438-442. Technical
2. Abstracts. The Astronomical Journal Vol.56; No.1193, Oct.1951.
  - (a) "The Limb Flare Of May 8th., 1951-----Helen W.Dodson.
  - (b) "Coordinates Of The Sun"-----Paul Herget.
  - (c) "Magneto-Hydrostatics and Solar Prominences-D.H.Menzel.
  - (d) "Some recent observations of helium lines in  
the infr-red Solar Spectrum-----Orren C.Mohler.
  - (e) "Emission Lines of the Solar Corona-----Ali M.Naqvi.
  - (f) "Solar Spectroscopy with Eshelles-----Pierce-Keith  
McMath-Mohler.

PUBLICATIONS (Continued).

- (g) "Sunspot Prominences and the Yellow  
Coronal Line"----- W.O.Roberts.  
(h) "Plasma Oscillations and Solar Bursts" --- R.E.Williamson.
3. In Volume number 1194 (same Journal) one finds the reports  
of American Observatories, all of which contain matters of  
mutual interest.
4. (a-b) "The 37-year Cycle In The Variation In The  
Length Between Sunspot Maxima----- H.W.Clough.  
CYCLES October 1951, pp.279-282. and continued  
in the November Issue.
- (c) "The 37 year Cycle in Sun Spots with Alternate Cycles  
Reversed,"(since) 1749.----- Gerould T.Lane.  
Also in the November Issue (CYCLES),  
"The 37 Year Cycle In The Frequency Of  
Chinese Earthquakes"----- H.W.Clough.  
Address: Foundation For the Study Of Cycles;  
9 East 77th.St., New York 21, N.Y.
5. "Solar Flares" (Good Reading)----- J.W.Evans.  
Scientific American, December Issue.
6. "Tree Rings And Sunspots"----- J.H.Rush.  
The work of Prof.A.E.Douglas. (Complete  
and interesting review)  
Scientific American January Issue.

PERSONALS.

The last word we received from the AAVSO was that Mr.Witherell  
was still in the hospital. Drop a card to AAVSO Hdqtrs. they  
will see to it that it is delivered.

Mrs. Margret Mayall -- AAVSO Recorder was also in the hospital  
she would be pleased to receive a get-well card.

Mr.C.F.Fernald had rather a bad accident some days ago. In going  
to his telescope, which is some distance from the house, he slipped  
on some ice and broke some bones in his elbow. As it stands now,  
Mrs.Fernald, graciously, is assisting "Cy" at the telescope.  
"Cy" observes the data and Mrs.Fernald records it. We sincerely  
hope that "Cy" is on the mend, but we know that it takes  
quite some time for broken bones to heal. Address your cards  
to Wilton, Maine .

We regret the lateness of this Bulletin, but, it's delay was  
also due to illness in our household. We trust that shortly  
we will be back on a strict schedule again with all releases.

"TRUTH IS MORE APT TO EMERGE FROM AN ERROR THAN FROM CONFUSION.  
Lord.Bacon.