

A.A.V.S.O.

SOLAR DIVISION BULLETIN.

Neal J. Heines, Editor.

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Paterson 4, N.J.

Following is a list of dates in 1948 when the heliographic longitude of the center of the sun's disc is zero. The dates define the beginning of solar rotations, which are numbered in accordance with the Quarterly Bulletin of the International Astronomical Union.

<u>Rotation Number.</u>	<u>1948 GCT</u>	<u>Rotation Number.</u>	<u>1948 GCT.</u>
1262	Jan. 11.07	1269	July 19.94
1263	Feb. 7.41	1270	Aug. 16.16
1264	Mar. 5.75	1271	Sept. 12.41
1265	Apr. 2.06	1272	Oct. 9.69
1266	Apr. 29.32	1273	Nov. 5.99
1267	May. 26.54	1274	Dec. 3.30
1268	June 22.74	1275	Dec. 30.63

The Supplement to this issue is important to all who receive this bulletin. We are happy to be of service to Prof. Gliessberg and feel honored in having called upon to participate in his research project.

Word has just reached us from Dr. H.W. Newton, Royal Observatory, England, concerning the death of Mrs. Annie S.D. Maunder, who died last September at the age of 80 years. Mr. Maunder passed away in March of 1928. "The Maunder" as they were always affectionally referred to, together were interested in things solar. During the first world war they were called back to the Greenwich Observatory to carry on the solar work in the absence of the regular astronomers who were engaged in the immediate war efforts. A number of books, and many papers are in the files of observatories throughout the world. Some of the papers were written jointly, others individually but none were offered for publication unless it was passed and approved of (ran the Galuntlet as Mrs. Maunder wrote) by the other.

Your chairman had much correspondence with Mrs. Maunder and hopes to have some of it published as it contains valuable information.

We greive, also, to announce the death of Dr. Ellsworth Huntington who passed away On October 17th., 1947, at the age of 71 years. Dr. Huntington was present at our Solar Conference held at the Harvard Club in New York City last September. (see last bulletin). Dr. Huntington was the author of many books. Among other books on Climatology, "Earth And Sun" and Mainsprings Of Civilization" were valuable contributions to solar correlations. He was a member of the Yale University faculty since 1907.

Kindly inform this office when any changes are made in the optical set-up in your telescope for sunspot work. Also indicate same on your monthly report form. It would be helpful, if you write in with red pencil the nature of the change, whether it be the eyepiece, filter or the method of observation.

ITS OUT '!!!'

Dr. Stetson's book: "SUNSPOTS IN ACTION".

Order your copy from your regular dealer, or from the Ronald Press, 15 E 26th St. New York City, direct. Price \$3.50, 252 pages, containing many illustrations, graphs and tables. The entire Zurich numbers tables are given from 1750 to part of 1947.

One of the many fine tributes to this book is from the foreword by the illustrious Sir Edward A. Appleton, and is as follows: " In this book the fascinating field of sunspot activity and it's terrestrial consequences is explored and expounded by Dr. Stetson who is himself a pioneer in this territory. Indeed, the reader could not have a more learned or more friendly guide ".

Perhaps there is wonder amongst the layiety why all such interest is manifest in sunspots, from personal experience, there is much interest prevalent amongst old and youn alike.

It therefore becomes your duty to be well posted on the details of your avocation. Study this book in order that you may be in a position to discourse freely with those who would like to know more about this subject. Reccomend to your friends the purchase of this work by Dr. Stetson. It is only by dissemination of knowledge that it is propagated.

Dr. William F. Peterson's book. " MAN WEATHER SUN "

This can now be ordered from the publisher for early delivery. The publisher is Mr. Charles C. Thomas, Springfield, Illinois. Price \$10.00, 500 pages, and, 300 illustrations, supplemented by graphs and tables.

This work is of a biological nature and not too technical and will be a valuable addition to your library for reference work and study. Dr. Peterson is an authority on solar relations and biological consequences.

If you are interested in a good map of the Moon write to George D. Baird at 2250 A. San Jose Avenue, Alameda, California. The size of this map is 9 x 12 inches showing crater depths, diameters and an abundance of relevant data. Price \$ 1.50.

The J.C. Hall Company of Pawtucket, Rhode Island, each year, publish a set of monthly dairies, vest pocket size. Price \$1.00. A seal grain leather cover with your name stamped in gold is also available at \$ 1.50, this cover lasts two to three years. The reason this is mentioned is because of the fact that your chairman uses these booklets for recording sunspot data at the telescope. They are so handy and, in addition, they come packed in a pasteboard box on which is printed the year they represent. They are highly recommended, for this purpose.

Our present supplement was printed before we noticed that it was designated as a November bulletin. Change this if you wish.

In the November issue of Popular Astronomy we find a report on the meeting held at Harvard College Observatory in October, by it's recorder Mr. Leon Campbell. The report covers the work of the Variable Star Section, The Occultations Group and the Solar Division, to the extent of space allowed for it.

WE TAKE THIS OCCASION TO WISH YOU ALL

A VERY MERRY MERRY CHRISTMAS

AND

A HAPPY NEW YEAR.

SUPPLEMENT TO NOVEMBER BULLETIN.

In September we received from, Prof. William Gleissberg, Director of the University Observatory at Bayazt, Istanbul, Turkey, a request to participate in a research project he has entered upon.

In October your chairman read Prof. Gleissberg's paper at the AAVSO Meeting at Harvard Observatory, Cambridge, Mass. We give this paper in its entirety, here, followed by some simple instructions.

NOTE ON THE FORESHORTENING OF THE SUNSPOTS AND THE
DECREASE OF THEIR NUMBER TOWARDS THE LIMB.

By W. GLEISSBERG.

It is well known that the areas of sunspots as published in the Greenwich Photoheliographic Results have been corrected for foreshortening by dividing the measured areas by $\cos d$ where d denotes the heliocentric angular distance between the spot and the center of the Sun's disc. It is thus assumed that the foreshortening of the sunspots is proportional with $\cos d$. This cosine-law of foreshortening was used also by me when I tried to explain the apparent preponderance of the eastern half of the Sun's disc over the western half with regard to (1) the formation of new spot groups * (a) and (2) the Total area of sunspots. (b) Archenhold (c) has suggested that, besides the "geometrical" foreshortening as expressed by the cosine-law, a "physical" foreshortening must be taken into consideration, so that the cosine-law of foreshortening should be abandoned. According to the investigations by Archenhold (c) and Mimmaert (d) the foreshortening of the sunspots seems to be stronger than the cosine-law would demand. Thus, the question arises: Which law of foreshortening do the sunspots obey?

The structure of the sunspots is not yet known so well that from it the law of foreshortening could be deduced theoretically. This law, therefore, must be established by means of statistical investigations. The starting point is as follows: As it cannot be assumed that the earth exercises any influence on the size of the sunspots, the true area of a spot must be independent of its heliographic longitude (e). Thus the law of foreshortening which we are looking for must fulfil the condition that, if the Sun's visible hemisphere is divided into longitudinal zones of equal width, the total area of sunspots observed during a sufficiently long period in each of these zones and corrected for foreshortening according to this law should be the same for each zone. The application of this principle, however, meets with the difficulty that the foreshortening produces another effect, viz, the apparent decrease of the number of spot groups towards the limb, and spots. In the central zones spots of smaller real size can be observed than in the outer zones. Consequently, any statistics of sunspots observed in different longitudinal zones is inhomogeneous, because it contains spots of different minimum area in different zones. It is clear, therefore, that the problem of establishing the actual law of foreshortening is closely related to the problem of determining the rate of decrease of the observed number of sunspots towards the limb. This rate of decrease doubtless depends upon the instrument and the method of observation. It will thus be desirable to have a great number of different series of observations made with various instruments, which could be used for an investigation of the apparent decrease of the number of spots towards the limb.

Members of the I.A.V.S.O. Solar Division can make a very important contribution to this investigation by supplying the necessary observational material. This will demand a slight modification of their observing program. They will have to add to the usual counting of spots visible in each group, only, a remark concerning the heliographic longitude of the group. It cannot be expected, of course that amateur astronomers with their modest instrumental equipment will make exact measurements of the heliographic longitude of spot groups. Such measurements are in fact, not necessary for our purpose. The heliographic longitude of any spot group may be replaced by the interval between the day of observation and the day on which the group crosses the central meridian of the sun's disc. If the latter day is one of the days on which the group is observed, then for this group the interval between each day of observation and the day of its central meridian passage can be determined immediately. But many spot groups cannot be observed when crossing the central meridian, for bad weather may prevent observation, or the group may disintegrate before reaching the central meridian or may be born on the western half of the sun's visible hemisphere. In these cases an experienced sun observer will find no difficulty in estimating the day on which the central meridian passage of the group would have occurred. Thus he will be able to determine, for every spot group he observes, the interval between the day of observation and the day of its central meridian passage.

Members of the I.A.V.S.O. Solar Division who are willing to contribute to the research work as outlined in this paper are requested to note down -- in parenthesis behind each of the individual group counts as recorded in column "g" of the monthly sunspot report form -- the interval between the day of observation and the day of central meridian passage. This interval will be entered with a plus sign, if the group is observed on the western half of the sun's disc, and with a minus sign, if it is observed on the eastern half; For example;

2 (-5) 15 (-2) 9 (0) 11 (+3)

would mean: Four spot groups have been observed; one of them, which contained 2 spots, was still five days before the central meridian passage, the second one, of 15 spots, was only two days before its central meridian passage, the third one, of 9 spots, was situated just on the central meridian, and the last one, of 11 spots, had passed over the central meridian three days ago.

Following are the instructions for entering the necessary data for this project, on our regular monthly report form which we will furnish in addition to your regular issue.

Headings

1. Complete the entries, (Date, Name etc.,) the same as on regular form.
2. Write in, above SUNSPOT REPORT, Gleissberg Foreshortening Project.
3. Draw a line through the letters , h,i,j,k,l,m,n, and o. above this, on the double line write in the words NORTH BELT. Do the same with, and above REMARKS but write in the words SOUTH BELT.

Entries.

1. The report so revised, now shows that data is required for a,b,c,d,e,f,g, and p, with the exception that no secondary data is necessary in column f, such as Ec, Wcc, d^2 , etc., The foregoing data can be copied from the regular monthly report.
2. Underneath, in the space between h and o, enter data concerning positions of the groups in the north belt starting with the most westerly group and working to the east limb of the sun. If necessary two lines of data can be placed in the allotted space.
3. In the space reserved for remarks enter the data concerning the positions of the groups in the south belt, in the same manner as for the north belt.

We will use for an example the illustration as shown on page 5 of the Instructions Leaflet (Revised Issue Feb. 1946). In this example 7 groups have been observed and 56 spots which are broken down as follows; 5, 1, 9, and 14 spots in the north belt and 12, 8, 7, spots respectively in the south belt. The observation was made on the first day of the month to which the report refers. If the central meridian passages of the groups of 5, 1, and 12 spots would have occurred on the 26th, 29th, and 31st., respectively, of the preceeding month, and those of the groups of 9, 8, 7, and 14 spots on the 1st, 3rd, 5th, and 6th, respectively of the month to which the report refers then the entries on the separate form would look as follows;

a	b	c	d	e	f	g	North Belt	p	South belt
		F	6	1410			5 (+6) 1 (+3)		
1	3	G	4	1700	7	56			. 12(+1) 8(-2) 7(-4)
		E	0	2130			9 (0) 14 (-5)		

All observers will want to participate in this worthy project, for the cause of science and an improved method of determination. Again, we need many observations from different localities because of weather conditions. Your observations may be just the ones to supply the missing data because of weather conditions elsewhere.

With a little practice the time consumed is small. It takes no more time than is consumed for the writing of the data itself plus the determination of the positions on the sun. At most no more than 15 minutes would be necessary.

Like the regular report this data must reach the Solar Division Office not later than the tenth of each new month for initial processing. Send with regular report.

Whether you participate or not it is requested that you send this office a post card stating your decision so that records can be designed here for recording the listings, number of observations, and observers etc., please confirm.

Starting time of this project will be January 1st., 1948, and reports will be received here by February 10th., 1948 and so on.

The project will take 5 years and thus will end approximately in 1953, as this span of time is necessary to accumulate sufficient data before the next sunspot minimum, as one year of minimum solar activity yields less data for our investigation than one month of maximum activity.

We have more in store for you later.