A.A.V.S.O.

SOLAR DIVISION BULLETIN.

Neal J.Heines,Editor.

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The Paper which follows was presented at our May 1952 meeting at the Clarkson College of Technology at Potsdam New York.

* "REMARKS ON THE COMING SUNSPOT MINIMUM"

Prof.W.Gleissberg.
Istanbul,Turkey.

Since 1947, the maximumperiod of the present sunspot cycle(eighteenth) solar activity began its general decline. At the present phase we are definitely approaching the minmimum period.
The decrease of the relative sunspot numbers, which began quite slowly in 1948 and 1949, became considerably stronger during 1950, and thefirst spotless days occured in December 1950.
During the whole year of 1951, however, the sun never appeared without spots. But spotless days were numerous during the past months and will become more frequent in the near future, since a minimum of solar activity is to be expected in 1954 or 1955.
Solar observers generally do not like the spotlessness of the Sun. They find solar observations more interesting when spot-groups crowd the Sun's disk, and it seems to them tiresome to look at the clean Sun and to wait day by day, patiently, until a small group becomes visible. But they must never forget that the value of a series of observations depends mainly on their length and homogeneity. Thus observations should not be neglected during the periods of quiescence in the Sun. Moreover , there are good reasons for hoping that the coming mimimum will be an interesting one. For in a paper which has been published by me, and one of my collaborators two years ago, (1) , it was shown that solar activity very propably will remain on an unusually high level at the coming sunspot mimimum. Our prediction reads as follows : It is to be expected with a probability of 0.95 (i.e. 19 to 1) that the smoothed relative sunspot number at the epoch of the coming mimimum will be higher than 9.2. If we check the series of the smoothed relative sunspot-numbers for all the sunspot minima since 1749, we find that solar activity was equally or more intense only, at three mimima, viz., at the minima of 1766, 1784, and 1843, when the smoothed relative sunspot-numbers were 11.2; 9.5; and 10.5 respectively. Thus,if this prediction comes true, we shall experience a sunspot minimum having a higher level of solar activity than all the minima during the past hundred years.

Like all my predictions on solar activity -- which, hitherto, all have been successful -- the above prediction is based on the eighty-year solr cycle. The existence of this cycle, which manifests itself in systematic variations of the main features of the eleven-year cycles, was suspected 90 years ago by Rudolph Wolf (2), but it could not be confirmed until recently, when I proved its realtiy (3). As the duration of this cycle is so long, only little more than two cycles have passed since 1749, the first year of the Zurich series of relative sunspot-numbers. Our knowledge of the eighty-year cycle, therefore, is still rather inadequate and will grow quite slowly. Each sunspot maximum and each sunspot minimum yield contributions to our knowledge of this long cycle, and also from this point of view importance should be attributed to the observations on the coming sunspot minimum.

Referances:

(1) W.Gleissberg, A.Kiral: Zeitschrift fur Astrophysik,-- 28,17 (1950).

(2) R.Wolf, Astronomische Mitteilungen Zurich,Nr. 14,(1862).

(3) W.Gleissberg,Publications of the Istanbul University Observatory, No. 27, (1944) Observatory (London), 66 , 123 (1945).

* This paper was read by Mr. Neal J.Heines, President of the A.A.V.S.O. and Director of the AAVSO Solar Division , at the Spring meeting, 1952, of the AAVSO held at Clarkson College Of Technology, on May 23-24, 1952. The author is indebted to Mr.Heines for having revised the paper with regard to the language.

Your Director supplements Prof. Gleissberg's paper with some suggestions for observers. Observe, carefully, items 1-5 for activity attendant with sunspot minimum.

1. SOLAR GRANULATIONS.
These occur during minimum and are of great importance. Reports concerning these should be forwarded directly to Dr.James C. Bartlett, 300 N.Eutah Street, Baltimore 1, Maryland.

2. Faculae
Faculae is often observed when the solar disk is void of sunspots. I call to mind, occasions,during the past two cycles when faculae was observed around the entire periphery of the sun's disk. It was a never-to-be-forgotten sight. Also, very bright, small circular areas of faculae were observed near the east and west limbs of the sun, within the confines of the sun-spot belts. At times, faculae was also observed in the Central Zone of the sun as well as being visible across the entire solar equatorial area, limb to lomb. The graceful forms and patternsn of faculae are a sight to behold. Items concerning Faculae should be entered in the REMARKS column. If you still lack space ,place the additional items on the reverse side of the MONTHLY REPORT FORM. Such items are very useful here for study in the future when we wish to refer to such activity attendant with other phenomena.

3. Faint markings.
These are also in evidence and should be reported. Approximate positions will suffice. It is quite possible that these markings are associated with eruptive activity of minor force.

4. Veiled Areas.
These are also occasionally observed and should also be reported. Approximate positions will suffice.

5. Of great importance is the reporting of high-latitude sunspots. These are the fore-runners of the new cycle.

As supplements to this issue we include two graphs.

No.1; EPOCHS AND INTERVALS OF SUNSPOT MAXIMA.

No.2; EPOCHS AND INTERVALS OF SUNSPOT MINIMA.

These should prove useful to both sections of the AAVSO Solar Division. Use these to study Prof. Gleissberg's paper on the coming sunspot minimum It is our plan to to provide other graphs related to solar activity, in order that you may project your interests to a higher level.

A few observers have asked for additional responsibility and we are pleased to respond. One of these has made a fine contribution; more about this later.

STATISTICS.

The total number of groups for the month of June was---------- 15
Zurich's Provisional Sunspot-number for the month of June was-------26.2
The mean monthly sunspot area (U.S.Naval Observatory) was not released.
*The highest sunspot group number as assigned at Solar Division headquarters on July 27th., was 77. It represented a group in the south belt very near the the east limb, surrounded by much faculae and revealed a division in the main umbral portion.
*Group counting referance for observers.

Predictions of smoothed monthly sunspot -numbers for the next six months.

Jul. 32	Oct. 26
Aug. 30	Nov. 24
Sep. 28	Dec. 22

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

" As a writer,I have only one desire---to fill you with fire,to pour into you the distilled essence of the sun itself. I want every thought, every word,every act of mine to make you feel that you are receiving into your body the sacred spirit,that changes clay into men and men into Gods. Thomas Drier.

PUBLICATIONS.

1. "SOLAR FLARE EFFECT ON GEMAGNETIC FIELD" ----------T.Nagata.
Journal Of Gephysical Research. Vol.57,Mar.1952 No.1.pp.15-49.
Techinal.

2. "EMISSIONS OF CORPUSCLES FROM THE SUN" -------- K.O.Kiepenheuer.
Same source as above (1.) ,pp. 113-120.
Study this.

3. "SUN ENERGY CHANGES"---------- Dr.D.B.Menzel.
Science Weekly News Letter. May 24, 1952.
Read about possible effect on long term climatic changes.

4." Summary of Sunspot Observations At Mount Holoyoke College"
Astronomical Journal,Vol.57,No.2, May,1952.p.56.Dr.A.Farnsworth.
Good comparative data.

5. "Sunspot Prominences And The Yellow Coronal Line"-Dr.W.O.Roberts.

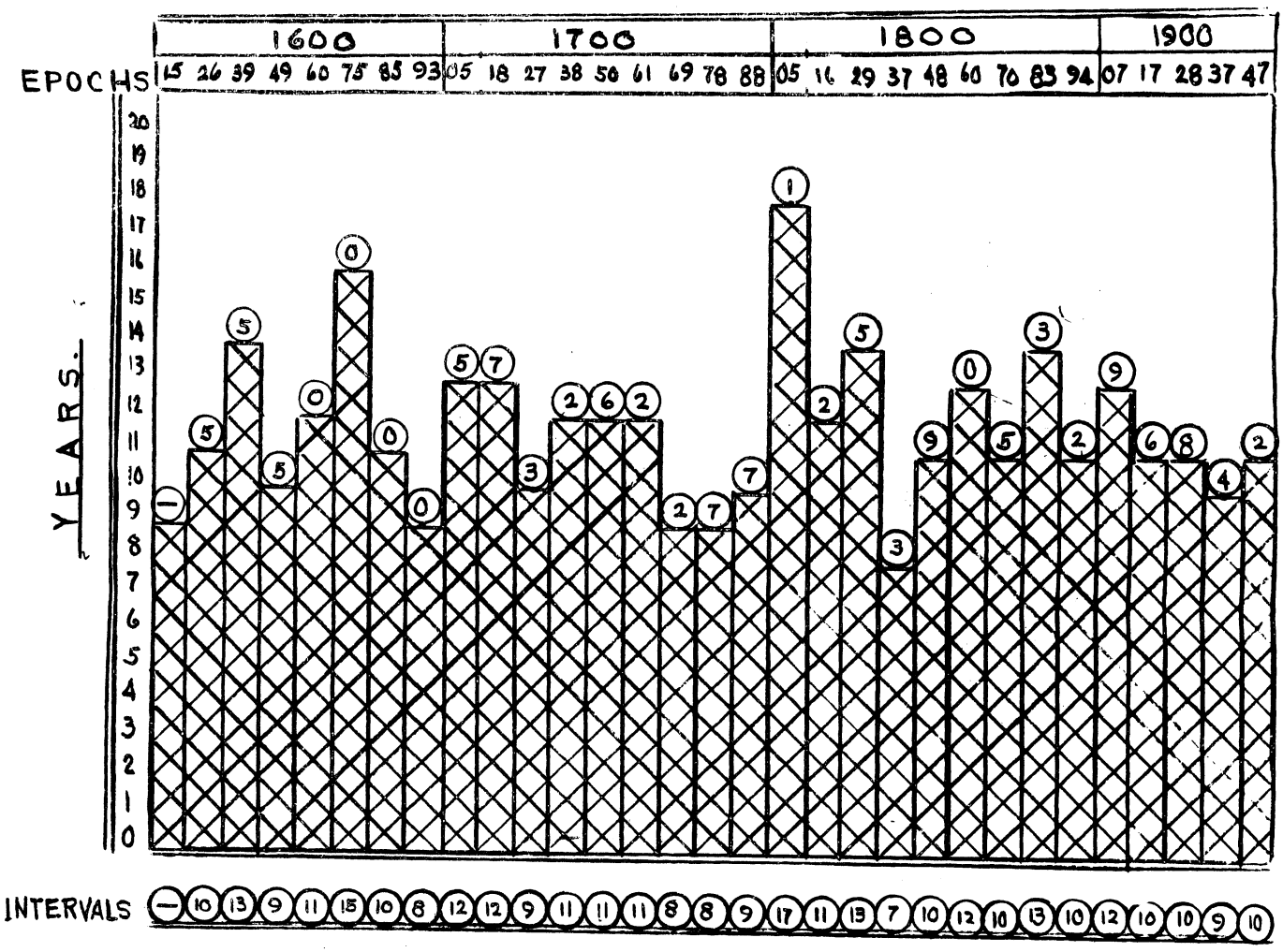
Astrophysical Journal.May,1952.Vol.115;No3; pp.488-494.
Be sure to read this.

6. "THE SUN" (Seventh Report)B.A.A.; Solar Section. F.J.Sellers.FRAS.
Memoirs Of B.A.A. Vol 37; No.2. part two.
Comprehensive report including illustrations
covering period from 1928-1952. Also details
and drawings of Spectrohelioscope used; (Hale Type).

PLEASANT VACATIONS.

Supplement number one.

EPOCHS AND INTERAVLS OF SUNSPOT MAXIMA.

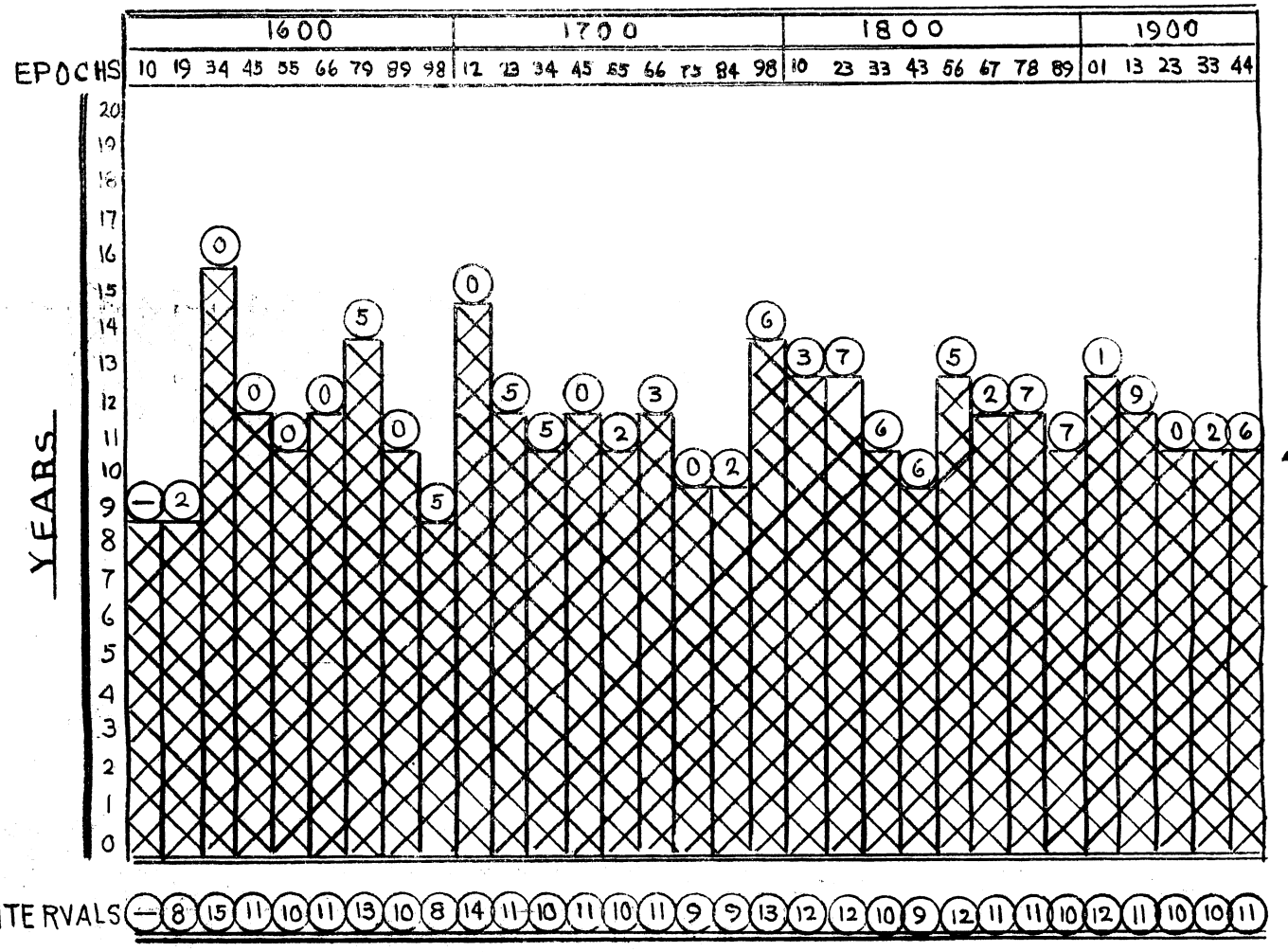


UPPER CIRCLE, FRACTION OF YEAR.

LOWER CIRCLE, LENGTH OF CYCLE IN YEARS.

Supplement number two.

EPOCHS AND INTERVALS OF SUNSPOT MINIMA.



UPPER CIRCLE, FRACTION OF YEAR.

LOWER CIRCLE, LENGTH OF CYCLE IN YEARS.

Data from ZURICH Statistics.

NJH