

magnitude star. This refers to the blue light which most affects the photo-electric cell, which is not very different from the photographic plate in color sensitivity.

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#### THE RECENT AURORAS AND SUN SPOTS

THE object of this preliminary communication is to call attention to the coincidence with the recent magnetic displays of a huge disturbance on the sun approximately parallel to the sun's equator and over 205,000 miles long so situated that the whole of it approximately passed centrally requiring at least two days for its passage over the sun's center. The group of spots consisted of at least six larger and numerous smaller ones, all stringing along in a line. My first observation of it was on the 23d of March when most of the group had already passed the center by about a day. If the group existed prior to the 23d without essential modification, it began to pass the center between the 20th and 21st, showing a lag in the propagation from the sun to the earth, if there be such, of something like two days. This seems to favor Professor Snyder's recently announced statement that there is a lag of 48 hours. The observation seems at least to point to the fact of there being some kind of propagation. The central passage required about two days and the aurora was evident on the evenings of the 22d and 23d at least.

Again on the 16th of April a medium-sized spot became central. It was probably one of the six spots of the before mentioned group. It was followed by a small spot some 200,000 miles after and also central about two days later. It was possibly another remnant of the old group, but too small to be of any consequence. It had disappeared by the 19th. Two or three days before the medium-sized spot became central, I remarked to several of my colleagues that I would not be surprised at auroral display or at least magnetic disturbances after it passed the center. I saw no aurora, the sky was unfavorable, and probably also the time, but on the morning of the

17th telegraph operators noticed a disturbance, which must have been due to the alleged propagation. If so the lag was about one day in this case.

My measurements of the positions of all the spots were made on the sun's disc directly with the micrometer and will yield heliographic latitudes and longitudes of all the points observed, but I have had no time to make the computations. I would wish this communication to be considered as a first approximation to more accurate values.

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#### POSSIBLE CONNECTION BETWEEN SUNSPOTS AND EARTHQUAKES

IN Monthly Notices of the Royal Astronomical Society for April, 1919, Professor H. H. Turner has discussed data taken from the Catalogue of Destructive Earthquakes compiled by Milne and from the Catalogue of Chinese Earthquakes. He publishes tables of earthquakes extending back to 49 A.D. and refers to old Chinese records dating to 1820 B.C.

From these data he slightly modifies two suspected earthquake periods, first published in the Report of the Seismological Committee to the British Association in 1912. The short period is shown by him to have minor and major limits of 14.8421 and 14.8448 months. The long period is taken as seventy-eight years. His tables show these periods almost certainly as real.

Nine times the limits of the short period give 11.1316 and 11.1336 years. Newcomb has derived the sunspot period as 11.13 years and Larmor and Yamaga as 11.125 years. The chance that this close commensurability is accidental is as the difference, which is less than one one-hundredth of a year, is to the period of about 1.24 years. That is about one in two hundred and fifty.

If the short period is so nearly commensurable the long period must be also. Seven times the sunspot period is 77.91 years, agreeing to 0.09 years with his round figure of seventy-eight years.

It would be interesting in this connection to analyze the counts by months of sunspots through several cycles to find whether there is any evidence of a short-period variation of this length, no matter how small. I hope to be able to do this within the next few months.

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#### SOME MICRO-PLANKTON FROM SALTON SEA

As is generally known Salton Sea is a body of water covering a part of the Imperial Valley in southern California which is 230 feet below sea level, and it is formed by overflow of flood waters, or by waters diverted for irrigation, from the delta of the Colorado River.

On December 16, 1919, Captain W. C. Crandall, of the Scripps Institution for Biological Research of the University of California, Dr. H. C. Bryant, of the California State Fish and Game Commission, and of the museum of vertebrate zoology of the University of California, and Dr. Will F. Thompson, of the California State Fish and Game Commission, started over the recently completed San Diego and Arizona railroad for a four days' biological investigation of Salton Sea.

Captain Crandall made a few plankton catches in Salton Sea and secured a number of water samples, temperatures, etc., besides making some rough physiographic observations. Dr. Bryant found about fifty different kinds of birds. Dr. Thompson's fishing equipment did not get through so he was not able to make the expected studies of fish. It was found, however, that Salton Sea is regularly fished for mullet which reach large size and are found in commercial quantities at present.

Four hauls were made for microplankton in Salton Sea with a fine (Number 25) silk net such as has been in use for some time for marine work. The catches thus made were purely qualitative and were taken at the surface under adverse conditions. One catch indicated a rather abundant microplankton. Catches made at other points showed very little. The presence of the following organisms was noted in a hasty examination of the catches: *Kera-*

*tella quadrata* (Müller), *Brachionus pala* Ehr., (most of these had female eggs attached), *Anabæna* sp., *Oscillatoria* sp., *Cælastrum* sp., *Amphiprora alata* Kuetz., *Fragillaria crotonensis* Kitton, *Navicula* sp., and *Surirella* sp.

Physiographic features of Salton Sea are very remarkable. There has been a fairly constant reduction of level at the rate of about one foot per year for some years. Consequent recession of the water has left exposed numerous mud geysers, hot and cold springs, various types of mineral springs and some excellent paint pigments almost ready for use. In the sea itself, near the mouths of its tributaries, it is notable that the water is in two layers, the heavy saline water below and the relatively fresh above. It thus resembles ocean conditions near tributaries.

The primary purpose of this memorandum is to call general attention to the fact that the Salton Sea locality offers extraordinary favorable conditions for continuous studies throughout the year in the lines of physiography, hydrography and biology. Since the microplankton is the biological group which gives the clearest index to biological conditions in water, it would be especially desirable to have that particular phase of biological study carried on. There is probably no other body of water in the world so favorably situated and conditioned for segregation and evaluation of major factors involved. It would be most fortunate for the progress of science in general if a biological station could be established in this region and its work assisted by that of a competent physiographer and hydrographer.

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#### CONDITIONS IN HUNGARY

TO THE EDITOR OF SCIENCE: I have just received a letter from a professor in Hungary, which should, I think, be shared with the readers of SCIENCE. The writer is one of the leading scholars in that country in his department, and with him for many years prior to the war I have had a most pleasant acquaintance. I know that only real suffering