

March 9, 1876.

Dr. GÜNTHER, M.A., Vice-President, in the Chair.

The Presents received were laid on the table, and thanks ordered for them.

The following Papers were read :—

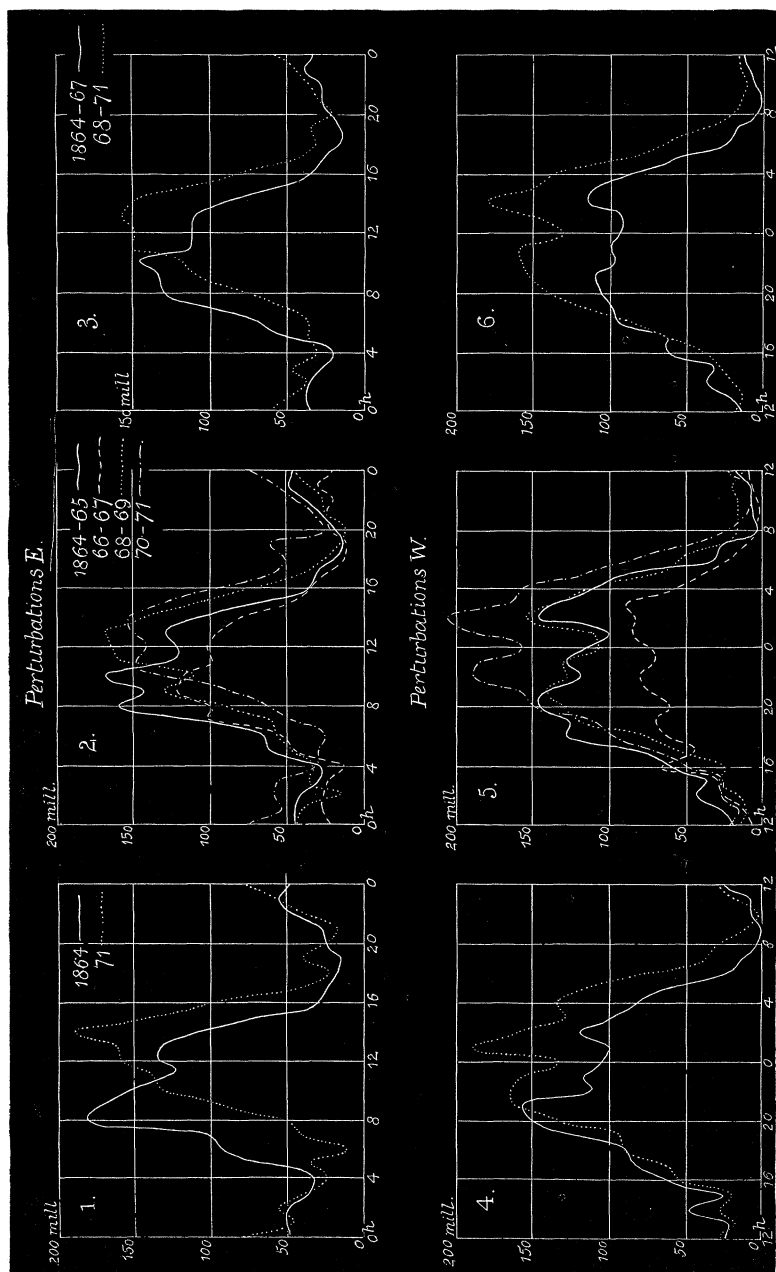
- I. "On the Diurnal Variations of the Disturbances of the Magnetic Declination at Lisbon." By J. CAPELLO, Director of the Lisbon Observatory. Communicated by BALFOUR STEWART, F.R.S., Professor of Natural Philosophy, Owens College, Manchester. Received February 12, 1876.

The Observatory of Infante D. Luiz has possessed since 1863 a set of magnetographs giving continuous records similar to those at Kew. In 1870 the results of the declination magnetograph, from the year 1864 to 1867, were published; and in 1874 the results for the same period of the bifilar and balance magnetographs (results embracing the horizontal force, vertical force, total force, and inclination) were published. At present the results of the declination for 1868 to 1871 are in course of publication.

The subject of this short paper is the diurnal variations of the disturbances of the declination. The method which has been adopted for reducing the disturbances is that of Sir Edward Sabine. I have taken  $\pm 2$  millimetres, or  $2'26$ , as the limits, beyond which limits all readings are regarded as disturbed.

In separating for each hour the disturbances (that is to say, the excesses and the deficiencies of individual observations over the monthly means for each hour), and then taking for each year on one side all the excesses and on the other side all the deficiencies, we shall have a series of numbers in millimetres which represent the law of the frequency of these disturbances.

In comparing the curves which graphically represent the law of the frequency of the disturbances (+ West) and (— East) for the 8 years (1864 to 1871), it is at once noticed that all the phases appear later (as regards the hour of the day) for the latter years. In the easterly disturbances this tendency is manifested whether we make the comparison between the curves of 1864 and 1871 (fig. 1) or compare the curves for every 2 years (fig. 2), or finally the curves of the two periods of 4 years (fig. 3). In the westerly disturbances similar results are found, but they are less marked; the movement appears to be slower; and it is in



these disturbances more difficult to prove it on account of the close double maximums which show variations from one year to another\*.

However, it is easy to see, in either of the figs. 4, 5, or 6, that the dotted curves are generally displaced to the right of the plain. This difference in behaviour between the easterly and westerly disturbances still tends to support the supposition of their different sources. It is very probable that these movements are periodical.

The staff at the Observatory who can be engaged in measuring the photographic curves of the magnetograph, and making the calculations upon the monthly tables, is at present engaged with the curves of the bifilar and balance magnetographs for the years 1868 to 1871.

It would be very interesting to know if similar displacements in the disturbance-curves at the stations in Asia and America have been observed, and in what direction.

The following Table gives the total of the disturbances of the declination :—

	West. millims.	East. millims.	East and West. millims.
1864.....	1666·3	1797·4	3463·7
1865.....	1970·6	1598·4	3569·0
1866.....	1313·4	1382·6	2696·0
1867.....	832·1	1164·5	1996·6
1868.....	1635·0	1514·7	3149·7
1869.....	1784·9	1755·8	3540·7
1870.....	2486·0	1813·3	4299·3
1871.....	2045·4	1734·1	3779·5
	<hr/> 13733·7	<hr/> 12760·8	<hr/> 26494·5

Thus near 1870, or a little after, there is a maximum period of disturbances, and from 1866 to 1867 there is a minimum period of disturbances, agreeing with the observed periods for the maximum and minimum of sun-spots.

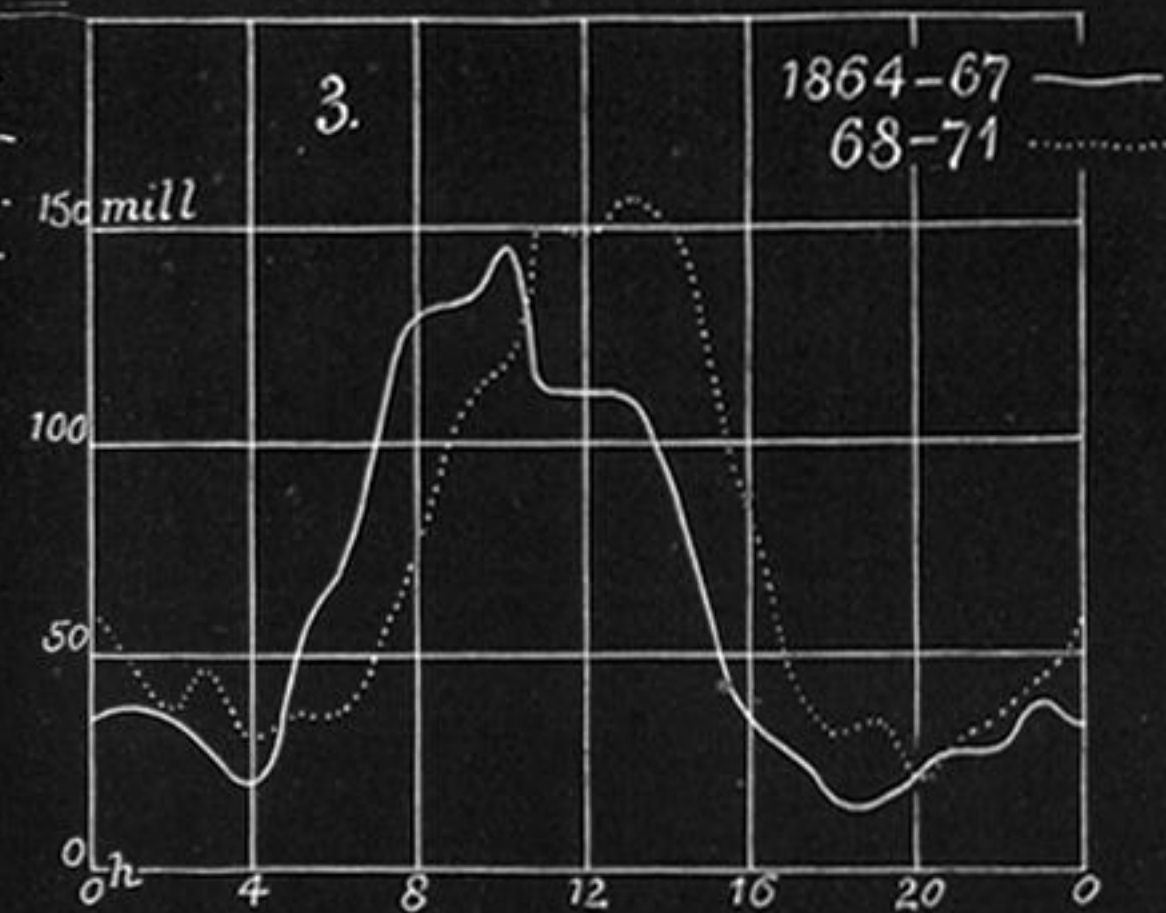
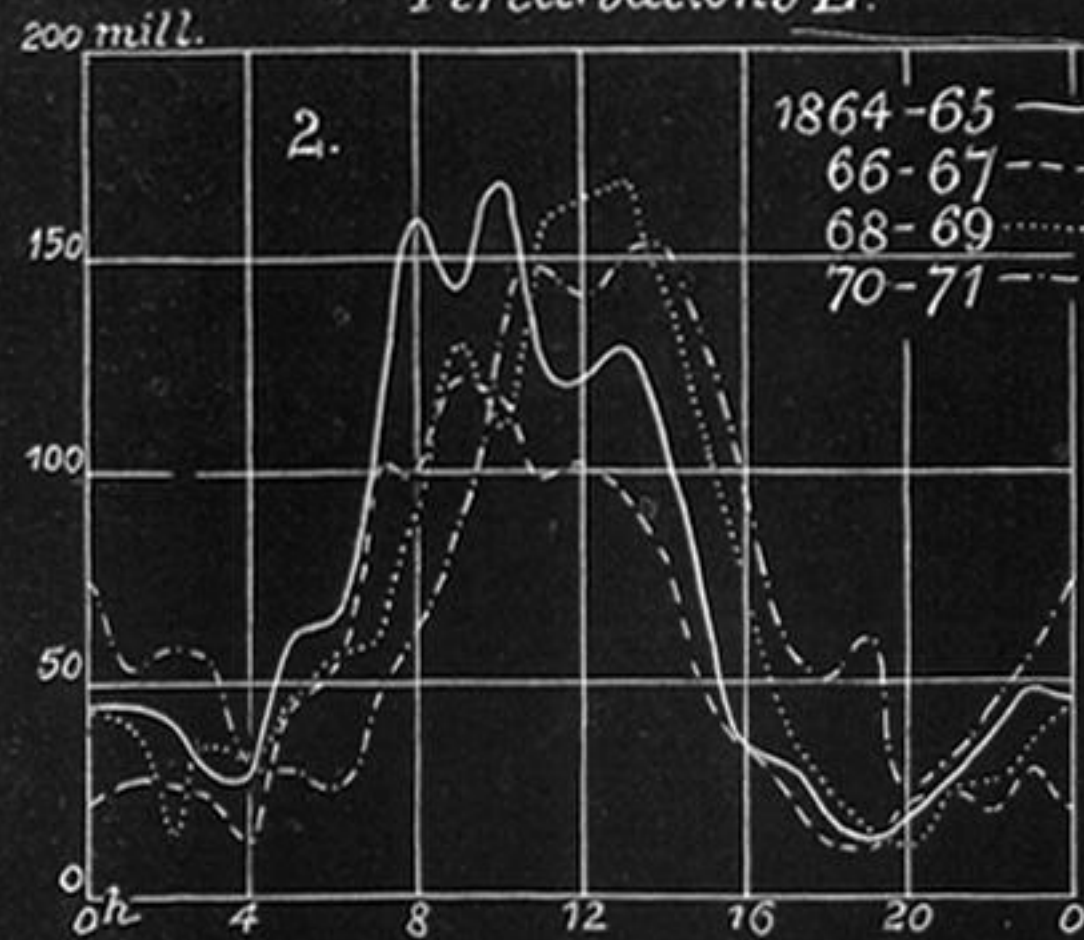
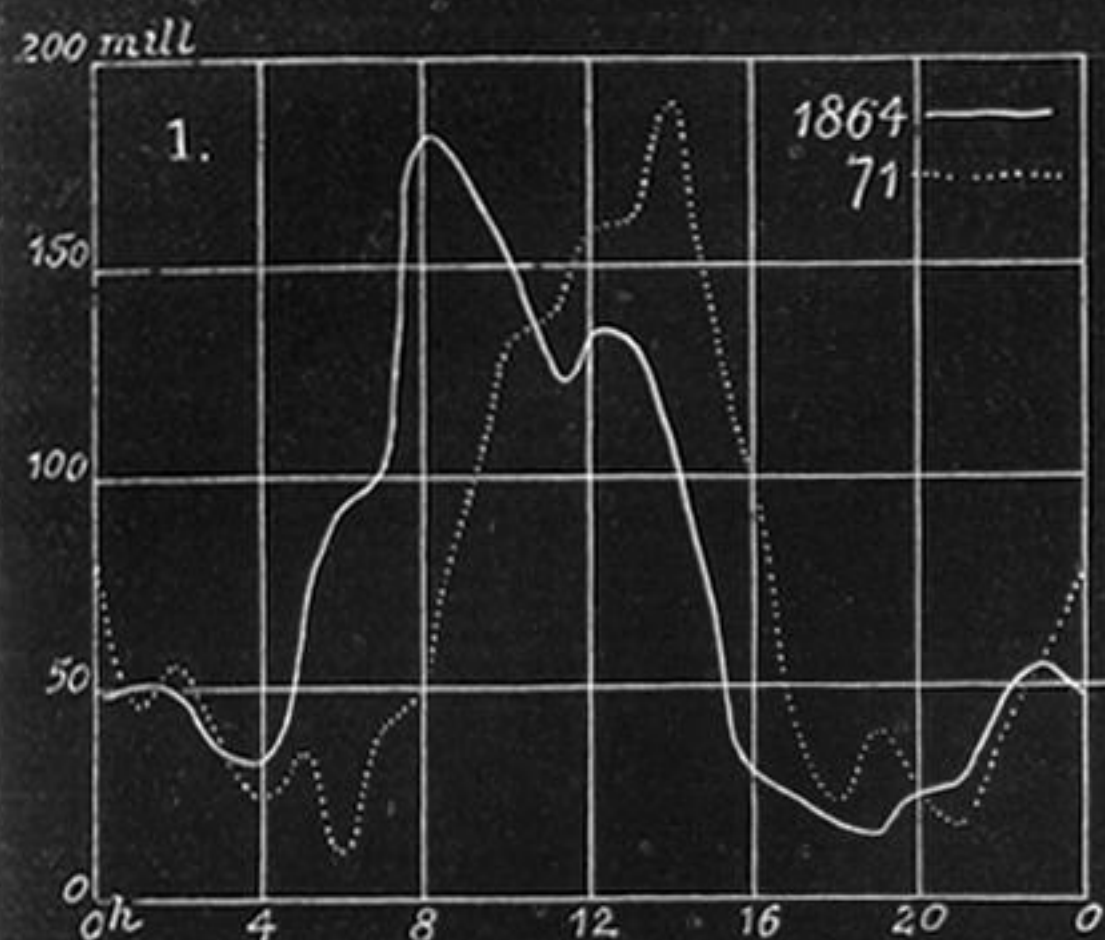
## II. "On the Development of the Crustacean Embryo, and the Variations of form exhibited in the Larvæ of 38 Genera of Podophthalmia." By C. SPENCE BATE, F.R.S. Received December 28, 1875.

(Abstract.)

The author states that, although the general forms of several genera of Podophthalmous Crustacea are known, yet the details of their structure have been so unsatisfactorily figured and described, that the value

\* It is observed that the hollow between the two maximums about noon corresponds closely to another secondary maximum of the easterly disturbances. It thus appears that, during the hours 20 A.M. to 3 P.M., there is another force in action independent of the two principal forces.

# Perturbations E.



# Perturbations W.

