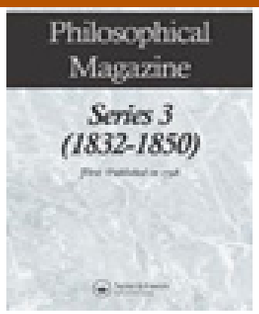

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XXIX. Account of the magnetical and meteorological observations made at Pekin

M. George Fuss

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a constant force, for measuring the intensity of the earth's magnetism. I not only plunge them several times in boiling water, but I cool them as often down to −20° or −25° of Reaumur, which is not difficult in our climate. This method has succeeded so perfectly, that I can recommend it to scientific travellers.

I have also established the existence of a daily variation in the inclination of the needle and in the magnetic intensity, by direct methods; that is to say, by observing every day the march and duration of the oscillations of a dipping-needle, very long, and suspended on a knife-edge. I have found *that the inclination is several minutes greater at* 11 *o'clock in the morning than at* 11 *o'clock in the evening. The intensity, on the contrary, is greater in the evening than in the morning.*

XXIX. *Account of the Magnetical and Meteorological Observations made at Pekin, by M.* George Fuss. *Communicated in a Letter from* M. A. Kupffer, *of the Imperial Academy of St. Petersburg, to* Sir David Brewster, *K.H. LL.D. &c.*

M. FUSS, the perpetual Secretary of the Academy of St. Petersburg, has just communicated to me a letter which has been addressed to him from Pekin by his brother, who is at present with the Mission which the Russian Government sends out every ten years. At my request the Academy of St. Petersburg furnished M. Fuss (who set out from this place in the spring of 1830,) with all the instruments necessary for making magnetical observations. He has with him two declination needles, one of which was executed by M. Gambey of Paris, and which will serve also for observing the hourly variations of declination; and these needles will remain at Pekin after M. Fuss's return to Russia, about the end of the present year. M. Fuss has also a dipping-needle, which is also from the workshop of M. Gambey;—several magnetic cylinders for observing the intensity, and a chronometer, besides the instruments for astronomical observations. The magnetical observations will be continued at Pekin, after M. Fuss's departure, by M. Kowanko, officer of mines, who will continue there during ten consecutive years. I send you an extract from this letter, and beg that you will communicate it to the Royal Society of Edinburgh*, and insert it in your Journal.

* The sittings of the Royal Society of Edinburgh were concluded before the arrival of this letter.

Letter from M. George Fuss *to his Brother at St. Petersburg.*

"Pekin, April 22, 1831.

"In spite of the numerous obstacles which presented themselves during my journey from Kiankso to Pekin,—both from the difficulties of the road, and from a distrust of our Chinese escort,—I have been able to determine at *seventeen* points, the inclination and the magnetic intensities; and at *eight* points the declination and the latitude. The longitudes have not been determined by the precise methods which were particularly recommended in my instructions (the transits of the moon and the occultation of stars); for the erection of the transit instrument and the great telescope would have excited too much the attention of the Chinese, and awakened their distrust. I hope, however, that in returning I shall be less embarrassed, and that I may then be able to occupy myself more successfully with the exact determination of the geographical position of some important points. At Dyan-dsia-keou, (Khalgan,) however, I have observed for the longitude the occultation of a small star in Capricorn, of the seventh magnitude, by the moon.

"Soon after our arrival at Pekin, there was constructed, at my request, in the garden of the Mission, a column of masonry for astronomical observations. A tent, of a particular construction and very commodious, sheltered the observer from the wind and the weather. The only inconvenience of this locality is, that the horizon is covered almost all round by adjacent houses. The cross of the Church of the Mission, which is distant from my little observatory only about ten toises, serves as a mark for the declination needle.

"Though this distance is not very great, I have however obtained a very satisfactory agreement among my observations, after having cut small cavities for receiving the screws of the needle in the plate of marble which covers the column, and upon which the instrument is placed. The declination needle of M. Gambey gave me, on the 10th of January, 1831, at Pekin at 3^h P.M., a declination of $1° 42' 57''$ W. The dipping-needle of Gambey gave, on the 30th of December, 1830, a dip of $54° 52'·1$, which is a mean between the results obtained by two different needles. The method of arbitrary azimuths* gave me, on the 6th of April, $54° 50'·7$. It is proper to remark here, that the Chinese do not employ iron in the construction of their houses. I have also observed the horary variations of declination during the winter solstice, and during

* An account of this method will be found in my Memoir on the Dip at St. Petersburg, inserted in Poggendorf's Annals, Observation 1.—*Note by M. Kupffer.*

the spring equinox, on the same days and at the same hours at which M. Kupffer observed at St. Petersburg. I have also determined the intensity of the terrestrial magnetic forces at Pekin, and at other points of my journey.

"Relative to the geographical position of Pekin, I have observed, 1st, eleven transits of the moon by the transit instrument; 2ndly, a central eclipse of α Tauri by the moon, with the great telescope of Dollond; 3rdly, during twelve days from the winter solstice to the present time, the height of the sun at noon for the determination of the latitude, which I have found to be nearly 39° 54′ 9″; and, 4thly, ten times, the transits of different stars across the plane of the prime vertical, to deduce the latitude according to the method of Bessel.

"I have observed also since my arrival, four times a day, the state of the barometer and thermometer. The greatest barometric height of 345·7 French lines took place on the 8th of March at midnight; and I am informed that on the same day, in the northern provinces, there was felt an earthquake. The smallest barometric height took place on the 20th of April, at six in the evening: it was 330·9 lines, and it was followed by a tempest. The greatest heat which has yet taken place was on the 20th of April, at 4^h P.M.: it was 25° cent. The greatest cold was 13° cent.: it took place on the 5th of February, at 6^h A.M. In the same month, however, on the 17th, the temperature rose even to 10°·5 cent. The cold was constant during the second half of the month of January: in the other half, as in the month of December and the beginning of the month of February, the temperature oscillated round the point of the congelation of water; since the 13th of March it has been constantly warm. A barometer and thermometer will remain at Pekin, which will be observed during the ten years that the Mission will remain in China*."

XXX. *Note on the Mean Temperature of Nicolaieff, as deduced from the Observations of* M. Coumani. *By Professor* M. A. Kupffer, *of the Imperial Academy of St. Petersburg.*†

M. COUMANI, at Nicolaieff, has communicated at different times to the Academy of Sciences at St. Petersburg, meteorological observations, carried on by himself, and through his means, with a perseverance, well worthy of imitation, at Nicolaieff and Sevastopol. These observations are reduced with much order, and to the register of each month is annexed a very elegant graphical view of the results.

* All the dates in this letter are reckoned by the New Style.

† Communicated by the Author.