LXXVI. Observations on the isothermal lines on the Northwest Coast of America, as deduced from the results in the two preceding articles

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Table III.—Showing the State of the Winds observed thrice a day.

During the past year there were,

92 North winds	85 West	170 South	23 East
49 NNW	45 WSW	34 SSE	6 ENE
59 NW	106 SW	49 SE	42 NE
32 WNW	41 SSW	15 ESE	21 NNE.

Hence we see that the prevailing winds are those of the south and the south-west.

LXXVI. *Observations on the Isothermal Lines on the North-west Coast of America, as deduced from the Results in the two preceding Articles.* By SIR DAVID BREWSTER, LL.D. F.R.S. &c.

IN determining the inflexions of the isothermal lines round the pole of maximum cold in the Arctic regions to the North of America, I employed the valuable observations of Mr. Scoresby; a long and valuable series of observations made on the west coast of Greenland, and communicated to me by Sir Charles Giesecke; together with observations made in Iceland, and in different parts of Canada. I sought in vain, however, for measures of mean temperatures in those parts of the Arctic regions which are placed in a meridian nearly opposite to our own; and it is therefore a source of great satisfaction to me to have received from M. Kupffer the valuable observations contained in the two preceding papers. These observations indeed have been yet made for too short a period to give us a very accurate measure of mean temperature; but the approximate results which they afford will be of some use, till we obtain a larger series.

In order to compare the observed mean temperatures of *Jloulouk* and *Sitka* with those calculated from the formula

$$\text{Mean temperature} = (86^{\circ} \cdot 3 \sin D) - 3\frac{1}{2},$$

D being the distance of the place of observation from the North American pole of maximum cold, which is situated in north latitude 80° , and west longitude 100° .

Professor Kupffer has not given us the longitude and latitude of *Jloulouk* and *Sitka*. The position of *Ounalachka*, however, according to the observations of English navigators, is between $168^{\circ} 40'$ and 168° of west longitude, and between $53^{\circ} 45'$ and 54° of north latitude. We shall take, there-

fore, the position of Joulouk at $168^{\circ} 20'$ west longitude, and $53^{\circ} 53'$ of north latitude; and from these data we shall find $D = 33^{\circ} 23'$

And the calculated mean temperature of Joulouk $43^{\circ} \cdot 980$

Observed mean temperature $40 \cdot 325$

Difference $+3 \cdot 655$

This difference between the formula and observation is much greater than usual; but we shall presently see that it must arise either from the observations not affording a correct mean, or from the temperature of the place being affected by local causes.

I presume that Sitka is the same place as the Isle of Sitka, in the Great Northern Ocean, where Dr. Erman made his magnetical observations. The following extract from Dr. Erman's table, given in his letter to the academician M. Wisniewsky, and published in the *Bulletin Scientifique*, will enable us to approximate to the position of Sitka.

	North Lat.	West Long.
Nov. 4. In the Great Northern Ocean	$56^{\circ} 54' \cdot 20$	$223^{\circ} 53' \cdot 20$
— 12. At the Isle of Sitka	$57 \quad 3 \cdot 12$	
— 20. In the Great Northern Ocean	$54 \quad 26 \cdot 50$	$221 \quad 22 \cdot 80$

As Dr. Erman has omitted to give the longitude of Sitka, we may infer from the preceding table that it cannot be far from 222° .

Hence we obtain $D = 25^{\circ} 38'$, and

The calculated mean temperature of Sitka . . $33^{\circ} \cdot 84$ Fahr.

Observed mean temperature $45 \cdot 05$

Difference $-11 \cdot 21$

This difference is so extraordinary, that we must either have mistaken the locality of Sitka, or there must be some singular source of heat in the island, or some inexplicable error in the observations. The reader will observe, that the difference is now —, whereas it was + in the case of Joulouk.

Without taking the formula as our guide, we have only to consider that Joulouk, in latitude $53^{\circ} 53'$, has only a temperature of 40° ; while Sitka, in latitude $57^{\circ} 3'$, has a temperature of 45° ! in order to be convinced that the formula will not be found to be in fault. We must wait, therefore, for other observations from these regions before we can explain the cause of this singular discrepancy.