

XVI. *A Comparifon of different thermometrical Observations in Sibiria ; by Mr. Wm. Watfon, F. R. S.*

Read March 15,
1753.

ACCORDING to the thermometrical observations made by Monf. Demidoff, at Solifkamsky, on the borders of Sibiria, latit. 59, in the year 1751, the greateft degree of cold was upon Nov. 9, at 7 in the morning, when the thermometer, according to Fahrenheit's fcale stood at 34 degrees below 0 ; which is 66 under the freezing point. This degree of cold, tho' much greater than what is ever obferved in thefe parts, is little, when compared with the accounts given us by Profeffor Gmelin, in the introduction to the *Flora Sibirica*. This gentleman, who was profeffor of chemistry and natural hiftory at Petersburg, was fent with feveral other learned men, to inquire into the natural hiftory of Sibiria, and was attended by fome ftudents, a painter or two, a miner, and other proper attendants. He continued nine whole years upon this expedition, and the obfervations he made, extraordinary as fome of them are, with relation to their truth, are fcarce to be doubted. The mercury in his thermometer, graduated according to De L'Ifle's fcale, often funk in winter, in very fouthern parts of this country, as near Selinga, in lat. 48, to near 226, which is equal to 55 and a half below 0 in Fahrenheit's thermometer, and is 87 and a half below his freezing point. But the cold is often more intense than this, as appears by the experiments made at Kirenginshi,

Kienginshi, where its sharpness was so great, that Professor Gmelin with difficulty staid at the door of his house, between three and four minutes.

Feb. 10, 1738, at 8 in the morning, the mercury stood at 240 degrees in De L'Isle; which is 72 below 0 in Fahrenheit. At the same place in 1736, Dec. 11, at 3 *p. m.* 254 in De L'Isle, almost 90 below 0 in Fahrenheit. Dec. 20, at 4 o' clock, *p. m.* 263 in De L'Isle = $90 \frac{44}{100}$ below 0 in Fahrenheit.

Jan. 9, 1735, 12 at noon, $275 = 113 \frac{65}{100}$.

Jan. 6, 6 in the morning, $280 = 120$ below 0 in Fahrenheit, and 152 below his freezing point.

Such an excess of cold could scarcely have been supposed to exist, had not these experiments demonstrated the reality of it; and Professor Gmelin assures us, they were made with all possible exactness, and agree with many others made in different parts of Sibiria by his direction.

It was not apprehended, that a greater degree of cold existed any-where, than that artificial one produced by Boerhaave, by means of ice and concentrated spirit of nitre, which sunk the mercury 40 degrees below 0 in Fahrenheit's thermometer; and this was supposed to be the point, beyond which no animal could bear it: and Mr. Gmelin's relation is the more extraordinary, as the French academicians under the polar circle mention the greatest degree of cold, observed by them, to be by Reaumur's thermometer 37 degrees, which nearly corresponds with 70 degrees below the 0 in Fahrenheit's.