

constant position. The movements were of the slow and stately order rather than those of the "merry dancers."

Since this aurora there have been several minor ones, and on March 6th there was a display, which, though only faintly coloured, was quite as beautiful as that of the 13th. It was marked by a beautifully folded curtain like aurora standing above a very dark cloud. The changes in the curtain were very rapid, and at times showed light tints of pink and green. The streamers were numerous, but were not coloured, so far as observed.

It is perhaps worthy of remark in connection with these two auroras that the days on which they occur are included in a list of six days on which bright auroras are supposed to return periodically. The days are Feb. 3, Feb. 4, Feb. 13, March 6, Sept. 9, and Sept. 29. The aurora of March 12th, though not equal to those described, is also worthy of record. Like that of Feb. 13th it faded into a uniformly hazy sky.

The aurora of Feb. 13th marked one of the most violent magnetic storms on record. At the Kew observatory the "magnetometers were not able to record the complete extent of the vibrations to which free needles were subjected, nor could the entire change of force be secured in the field of the instrument. The limits, however, clearly recorded, were 2° of declination, from .1760 to .1830 of horizontal force, and from .4350 to .4420 units of vertical force expressed in C. G. S. measure in absolute force."† At Toronto, "during the early morning hours the declination magnet was considerably west of its mean position, and east of it during the afternoon. The vibrations were exceedingly rapid, notably so in the morning when the range of declination was over $2^{\circ} 37'$ The horizontal component was very much affected. Some of the vibrations were so rapid that they were barely recorded. The disturbance started with a sharp increase of the force. In the morning the force was considerably

† Letter to *Nature* by Mr. G. M. Whipple, Feb. 18th, 1892.