

snow and ice. On the contrary, in both respects, land in the equatorial regions may absorb more heat than water ; and thus we have, as general conclusions, the *greatest uniformity* of climate, with the greatest expansion of sea ; the *greatest mean annual heat* toward the poles, with equatorial land and polar oceans ; and the *least mean annual heat* with polar land and broad equatorial sea.

If, therefore, during one long geological period, land of the same extent as that now above the waves, and rising to the same height, were situated round the poles, while the zones of the earth, which received most solar rays, were occupied by sea, there can be no doubt that the mean annual heat of the whole terraqueous surface might fall considerably, the greatest depression being in the polar regions. Such a state of things is fancifully called by Mr. Lyell the *winter of the "great year."* On the contrary, with continents equal to the present placed on the equator, and wide oceans overflowing either pole, there would be an augmentation of mean annual heat, and the "summer" of the great year would have returned !

Several questions, however, remain to be answered, before this elegant hypothesis can be embraced as a sufficient cause of the changes of climate, which appears to have come over the northern zones.

The collecting of land around the poles, or on the equatorial line, or in any other position, is not positively contradicted by known geological facts, but neither is any decided support given to the assumption by those facts : it cannot even be declared to be *probable* or *improbable*, on the ground of observations ; for though these certainly teach us that the position of land and sea is indefinitely variable, they have determined little or nothing concerning their actual distribution in former geological periods.

This speculation is then purely hypothetical, and framed to suit the phenomena, as others may be, and have been ; but it involves no physical improbability on a great scale, and its details are based on real causes.