

the largest type of pulsation; upon it are superposed the great pulsations known as glacial epochs, each with a length measured probably in tens of thousands of years; their steady progress is in turn interrupted by smaller changes of climate, such as those of which we have found evidence during historic times in Central Asia; and finally, the climate of the world pulsates in cycles of thirty-six years, and even these are interrupted by seasonal changes and by storms. A curve representing the climate of the earth during the last million years would be almost infinitely complex, a sinuous line composed of large curves superposed upon larger, small upon large, and smaller upon small. It is conjectured that the smaller changes of climate are due to varying amounts of heat and other forms of energy received from the sun. It is probable, though it has not been demonstrated, that the larger are also due to the same cause.

Turning once more to our immediate subject, the changes of climate in Asia during the last two thousand years, we have seen that from analogy with the glacial and Brückner cycles we should expect them to be world-wide. Many facts point to the correctness of this view, though as yet the matter has not been critically studied outside of Asia. To begin where my own observations come to an end, Syria and northern Arabia, from three to five hundred miles south of Lake Gjoljuk, present phenomena almost identical with those of Central Asia. Mr. F. A. Norris, a member of the Princeton expedition to that region in 1904-05, states that a large number of ruins lie in the desert in locations where to-day there is no adequate water supply, and where it would be impossible to secure sufficient water with the sys-