measure to the presence of mountain barriers which shut out the moisture-laden air of the oceans from the basins which they inclose. Thus the formation of basins tends to produce a dry climate, and the dry climate tends to preserve the basins and at the same time to produce a peculiar topography.

It is not simply with aridity of climate that we have to deal in Eastern Persia. During Quaternary times there appear to have been changes of climate, and as some of the changes took place very recently, probably since the occupation of the country by man, their careful study is of great importance for the purpose of our expedition The chief evidences of climatic changes take the form of numerous lacustrine and fluviatile terraces. The former, like the terraces of Lake Bonneville, are due to changes in the water-level of lakes or playas, while the fluviatile terraces appear to have been formed where one type of climate caused the deposition of gravel, and another type, probably either drier or warmer, caused this to be channeled. The physiographic effect of changes of climate is so important that its exemplification in Persia demands the most careful consideration. The uniformity of the terrace phenomena throughout the semi-arid countries of the western half of Asia seems to be explicable only on the theory of a succession of epochs of changing climate corresponding to the glacial epochs of more northern countries.

The lake and district of Sistan afford unusually clear evidence as to the subdivision of Quaternary time. During the latter part of the Quaternary era volcanoes broke out within the area of the lake, and in the course of their eruptions large portions of the lake bottom were uplifted and covered in part with caps of lava. Subsequent erosion has produced cliffs from 50 to 600 feet high, which expose large portions of the ancient lake deposits. The history of the Quaternary era and of the forms assumed in Persia by the period which corresponds to the glacial period of other lands is here laid bare without the concealment of earlier phases and without undue emphasis on later events.

The record of the climatic changes of the Quaternary era is almost everywhere incomplete, whether preserved in moraines, in terraces, or in aqueous deposits. One formation is placed upon another, and unless each successive epoch happens to be less severe than its predecessor, the traces of earlier epochs are almost sure to be effaced. The records of climatic change are preserved most perfectly in the bottoms of shallow lakes without outlets, where a diminution in rainfall or an increase in evaporation produces a great diminution in the size of the body of water and consequently in the character of the sediments deposited. Naturally the bottoms of such lakes are of little use to the geologist, because of his inability to study them. Hence the importance of Sistan, where so large a part of the record is exposed. It affords a key which may serve to unlock the history of the neighboring Caspian basin and of still larger regions.

The deposits uplifted at the time of the Sistan volcanoes and exposed to view by the erosion of the lake consist of layers of reddish clayey silt varied with bands of sand and gravel on the one hand, systematically alternating with remarkably uniform unbroken layers of hard, greenish clay on the other. The reddish layers contain lateral unconformities, discontinuous layers of coarser material and raindrop prints, which indicate that they are of subaerial origin and were laid down by