

miles long that water can be led onto the old plateau and on such a gentle grade that scarcely any sediments are introduced, so that the surface there to-day is practically that of antiquity, the uplifted and dissected horizon of many thousand years ago.

Type III or high-valley oases, because of their position on terraces high above the river, have perhaps been most free from natural burial; and owing to isolation from hostile tribes and their excess of water-supply, were less often abandoned to erosion.

Favorable topography, crustal movement, and shrinkage of alluvially active areas have thus conspired against a universal burial, but we still face erosion. The question is, what is the reason why Nature's wind and water have not altogether obliterated whatever she left unburied? It can not be from absence of the agencies of erosion; they are universal. There must have been protection. We have seen in the equation  $h = lG - [E(t-l) + At]$  that as long as  $t < l \frac{(G+E)}{(A+E)}$  there is still a discoverable remnant. If  $l=t$ , that is, if the kurgan is still occupied and never was abandoned, then the factor  $E(t-l)=0$ . That is, no erosion has taken place. For several reasons, climatic and protective, it has always been advantageous to reoccupy old culture-mounds. In other words, the value of  $l$  was from time to time increased and so the time necessary for obliteration,  $t_b = l \frac{(G+E)}{(A+E)}$ , increased whether  $E$  alone was involved and  $A=0$ , or when  $A$  alone was involved and  $E=0$ , or when both together were involved.

In a grassy region the value of  $E$  is greatly diminished and vanishes altogether where loess is precipitated. Such a region is found in the wide Hissar valley, where kurgans are mantled with a foot or more of loess and the great citadel of Hissar itself, rising about 100 feet above the plain, stands as evidence of that protection. It is not unlikely that other kurgans, now bare, were once favored with grass. And there is one other protective agency that has played an important rôle in the preservation of ruins to discovery; and that is flying sands. In Chinese Turkestan many cities have been reexposed by the shifting dunes that swallowed them over a thousand years ago. Such must have been the fate of most of type Ia, or far-out delta-oases.

But do not be too encouraged by this display of protections against obliteration. We still must face the fact that few remains of very great antiquity have as yet been found. Erosion and aggradation have done their work and, where time allowed, have successfully obliterated. Whatever may be their actual values in any given region, the agencies of Nature, where continuous, have completed the task in  $t_b = l \frac{G+E}{A+E}$ . And though flying sands have preserved, we must believe that most of what they have buried shall remain to us unseen. And high-valley oases, type III, though in other ways more favored, had to be on or near the edge of such steep slopes and receding canyon walls that many of them have been long since blown and washed away or caved into their valley torrents. On