

The five types of oases behave in different ways toward the questions as to their early distribution and what antiquity may be discovered. It is obvious that all streams, and even valleys now dry and their possible prolongations on the plains, should be explored for remains of types I, II, and III. The possible distribution of type IV is more indefinite. They may have existed on almost any steppe of clay or loess, even where now invaded by dunes. Obviously, type V should be explored for on all lake-shores, even where no lake exists to-day.

RELATIONS BETWEEN EROSION AND BURIAL IN THE OBLITERATION OF KURGANES
(OASIS CULTURE DEPOSITS).

The chances of finding culture mounds more than a few thousand years old seem relatively slight. Under the arid conditions of most of Central Asia, mounds are bare of vegetation and stand windswept with no protection from the wear of sandstorms. They are no more than naked heaps of unresistant clay, of which the round-worn forms of those more ancient stand evidence of fast withering by wind. During our work at Ghiaur Kala there was a sandstorm of such strength that stones 2 inches across were bounded along and smaller ones driven through the air with a blast of fine stuff scoured off the mound. Fortunately such storms are rare, for if they came often all our older mounds would long since have disappeared. Every time a desert rain falls it wears the mound away to best advantage; and lastly but not least, anything upon aggrading ground must in time be buried out of sight. Obviously most of the important oases were on delta plains and flood-plains that were always aggrading through year after year of muddy floods and irrigation.

Any discussion, therefore, about ancient oases, abandoned or occupied, must balance the effect of erosion and natural burial upon their remains. Sometimes we can be sure that no growth of the plain around has taken place, and in some more rare instances we know there has been protection against erosion. The most important remains, however, have been subjected to both. The problem then arises, how to deal with a time-equation into which there enter three rates—growth of plain, growth of culture, and erosion. We believe that in a given region these have fairly constant values when expressed in terms of centuries. Without pretending to get ultimately accurate results, we can give at least a logical expression of the relations between these different rates through time. Indeed, without keeping the problem in logical proportions, we could never hope to understand either the relative rarity or distribution of really ancient remains.

Let t = number of centuries since a city was founded.

l = number of centuries it was occupied.

G = culture growth per century.

A = aggradation of plains per century.

E = erosion per century.

h = height above plain at any time.

If the mound is still occupied and has been from the beginning, its height will obviously be $h = lG - At$; and since in that case $l = t$, $h = t(G - A)$, or the