

On plate 5 I have represented the three sites one above the other according to their order of succession, and have assigned values, in feet of strata, to the intervals that were due to periods of abandonment and wastage.

Into the method adopted in estimating the culture-gaps, there enter both geological and archeological factors. In chapter II it was shown that the observations made in our shafts proved that the delta lies on the piedmont belt of tilting, or rather of the reciprocal movement due to removal of load to the plainward side by the deposition there of alluvial silts. It was shown also that in the part of the delta upstream from the alluvial shore-line, the channel of the stream was, at repeated intervals, alternately cut down to a considerable depth, and again filled up with silts. We were able to determine definitely two such cuttings-down and three fillings-in or aggradings, all during the lives of the three sites. Now, these geological events ran parallel with the human history of the delta-oasis, and since they have an important bearing on this history in several directions, I have platted them on plate 5 parallel with the cultures.

The North Kurgan was founded on a previously dissected valley at a time when this valley was aggrading, and the valley continued to fill till towards the end of the oldest culture. The first settlement extended down the side of the valley to a level 28 feet below the present surface of the delta-plain, which latter we will use for a datum in this discussion. At this level we find in shaft I standing house construction, and at the same level in shaft II there occurred in alluvial sediments fragments of the pottery characteristic of this oldest culture. No pottery was found below this. From -28 feet upward the alluvium contains this oldest pottery as far as -20 feet, where there occurs the evidence of the filling having ceased; for the presence of pottery characteristic of the upper culture of the kurgan intimately associated with charcoal and animal bones indicates an occupation of a dry plain and not of a flood-plain.

The relative time during the life of the oldest occupation at which this aggrading ended is determined proximately as follows. It was shown in chapter II that we were able to determine that the rate of growth of the alluvial silts in the valley was to that of the culture-strata as 1 to 2.5. Now the 8 feet of silts between -28 and -20 feet are the equivalent of 20 feet of culture-strata at the ratio of 1 to 2.5. But the oldest occupation of the kurgan has 45 feet of strata, leaving a range of 25 feet before the end of the first culture within which to place the end of the aggrading. I have taken the mean, and placed the time of ending of the aggrading at a point 12.5 feet of culture-strata before the end of the life of the first settlement, that is, opposite 32.5 feet above the base of the kurgan. The next aggrading had already begun before the first settlement of the South Kurgan, which, like its northern neighbor, was started on the edge of a valley; and it continued until there had accumulated 52 feet of culture-strata, as stated in chapter II, and is so represented on the diagram. That the valley was then cut down to at least -28 feet, and had aggraded at least 12 feet before the beginning of the upper or iron culture, is shown by the presence at 16 feet in shaft B of pottery