

How much width of the Great Alai Valley was included in the block tilt is uncertain. It was, however, shown in the discussion on the Alai Valley form that there has been a lowering of base-level and consequent deepening of the valleys emptying into the great valley from the Trans-Alai range, and that this lowering had taken place since the close of the Alai glacial epoch. It was further shown that this took place with a depression of a belt including the side-valley systems from the north and possibly reaching to the very base of the Trans-Alai range. The depression and filling up of the Sari Tash Valley and others running south from the Alai range was probably brought about by a block-tilt. This tilt can explain the observed changes of both the Alai and Trans-Alai ranges, and since the deepening of valleys in the latter took place after the close of the Alai glacial epoch, this tilt probably occurred since that epoch. It is, however, not likely that this one tilt was the only movement that took place; in fact, we have seen that the border of the lowland plains was tilted up, presumably during the block-tilt, and there is no reason to suppose that the Trans-Alai range did not, at the same time, move either up or down a little on the block-tilt dislocation bordering it. If the tilting of the waste on the lowland plains was caused by a drag-up on the block-tilt dislocation there, the tilted waste was deposited largely during and before the Alai epoch, while the deposit overlying its lower portions are, in age, from bottom up, orogenic to present, inclusive.

The relative antiquity of different horizons might be estimated in two ways: (1) as directly proportional to magnitude of dip less normal surface slope of fans of that coarseness of material; (2) as directly proportional to thickness of overlying accumulations. These methods would, however, be complicated from the fact that the rate of tilting seems to have been accelerated from the beginning, for the transition of valley form was always to the narrow from the broad. This complication might be overcome by careful measurements of terraces and determination of the factor of acceleration.

EXAMPLE.

Let n be the present surface with normal slope. Let A and B be two horizons, the ages of which are to be determined. (See fig. 118.)

Let dA and dB = depths below surface.

Let f = acceleration of tilting, $\frac{\text{age } A}{\text{age } B} = \frac{\langle (A-n) \rangle}{\langle (B-n) \rangle} \times \frac{l}{f} = \frac{dA}{dB} \times \frac{l}{f}$ as a rough estimate.

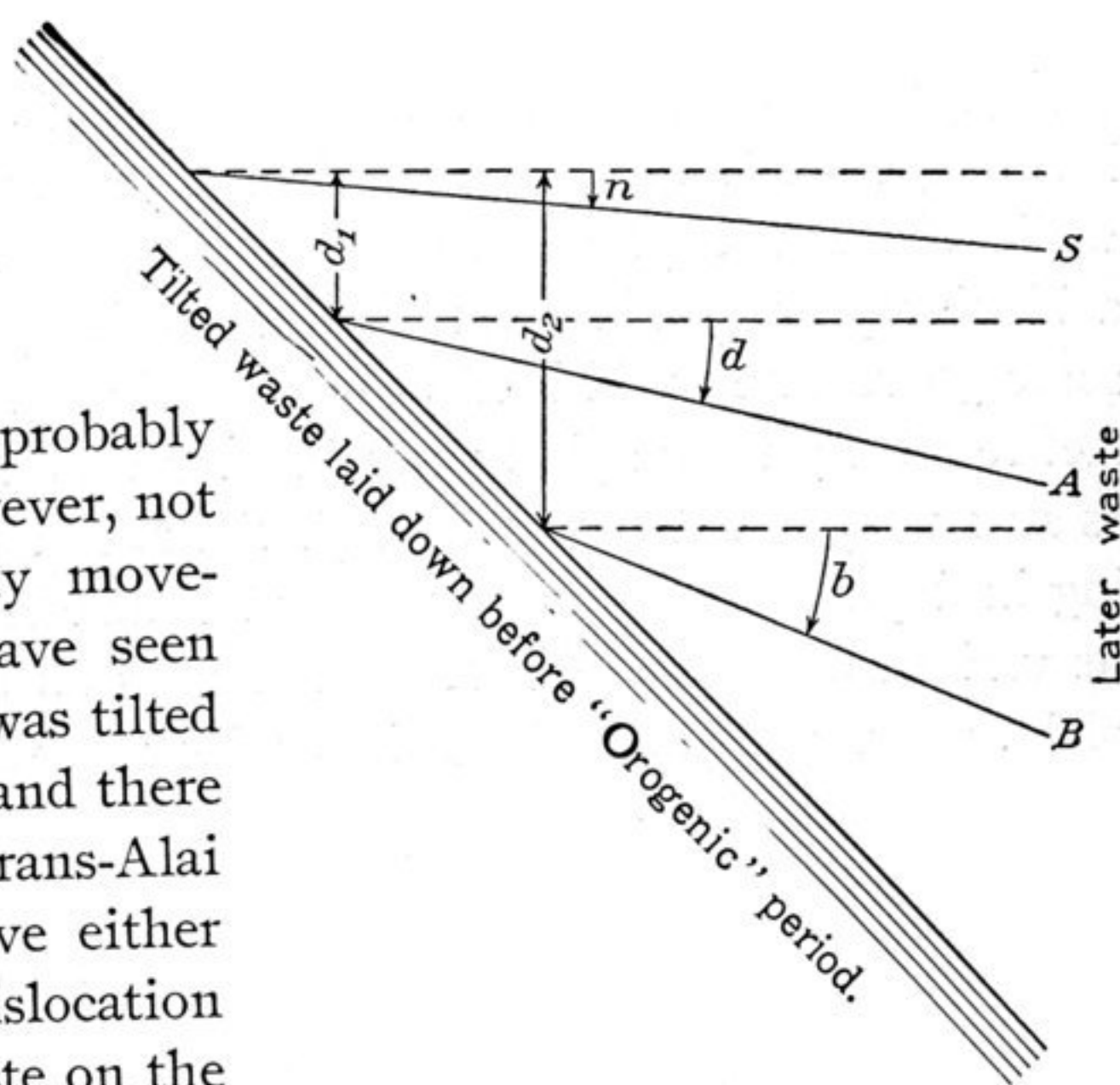


Fig. 118.—Explanatory diagram for example in determining relative antiquity of horizons of the waste on the plains.