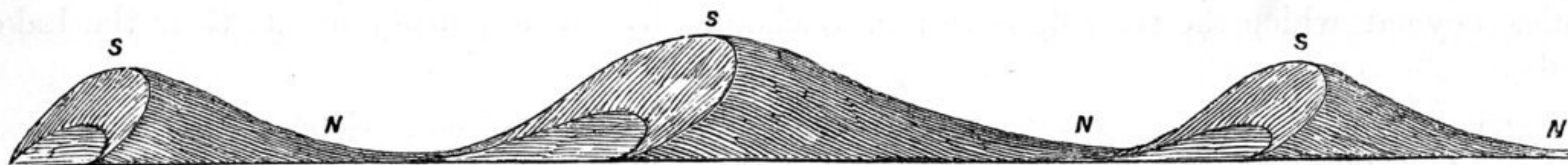


the projecting horns of the crescent to the plain, but in the arc of the crescent itself the drop was very sudden, as shown in this diagram :—



The wind blowing from N. drives the loose sand up to S., beyond which it topples over and passes down the slope out of its further action. And a continuance of this process, without changing the form, is always shifting its particles from the direction of N. to that of S., and thus advancing the sand across the plain.

From some partially buried buildings we examined at this place, and from the data furnished to us regarding the period of their construction, and the distance of the sand dunes at the time, we calculated that these sands were advancing over the plain between S. and S.E. at the rate of about a foot a year or rather more at this spot. But from similar data regarding a half submerged post-house, eight miles off to the south, we calculated the rate of advance at fully three feet a year at that spot. This post-house occupied the summit of a low mound on the plain (the surface of which here presented a wide shallow hollow encrusted with salines and covered with reeds, as appeared in the intervals between the successive rows of sand waves) which had a very distinct slope towards a great drainage gully some few miles further to the south; and this inclination of the ground may account for the more rapid rate of advance at this spot, though the varying force of the wind would not be without its aiding effects.

From these instances it may be concluded that the rate of advance of these moving sands is a varying measure dependent on the velocity of the wind and the nature of the surface; and that under any circumstances the process is a gradual one. Consequently it may be assumed that the burial under them of the cities of Lob and Katak—though a sudden catastrophe for individual houses as they successively became overwhelmed—was on the whole a slow process extending over many years, and thus afforded the inhabitants ample leisure to abandon their doomed abodes and migrate to safer localities.

This view is supported by an incidental reference to a whirlwind of sand which submerged a considerable portion of the city of Katak about the middle of the 14th century in the *Tárikhi Rashídí* of Mirzá Hydar. In his account of this storm he describes the sand as falling from the sky as does a shower of rain; and probably it was blown off the overtowering sand dunes which in their progressive advance had encroached upon the outer walls of the city. But beyond recording the flight of two or three individuals from the limited area of this convulsion of nature he does not mention any general exodus of the population, though he alludes to the circumstance of their having been frequently warned to depart from the city doomed to destruction. And this indicates that the impending calamity was foreseen and its nature understood.

Wandering shepherds and huntsmen who now frequent the vicinity of these buried cities report that the houses and domes and minarets of Katak are seen to reappear from under the sands in all their pristine perfection; and they tell marvellous tales of the undisturbed repose and uninjured state of their furniture and contents; and they even describe the skeleton forms of the occupants as still retaining the exact positions they happened to be in at the time they were overwhelmed, by the sudden fall and subsidence of some great encroaching sand dune most probably, the regular form of whose loose agglomeration of particles was broken by the obstruction to its symmetrical advance offered by the house it buried in its own dissolution and subsidence. This, I may here note, is easily understood from what we witnessed at Kúm Sháhídán. Here we saw a sand wave of three contiguous semilunes which in its advance across the plain had come upon the court wall of a tenement in the way of its progress. One of the side semilunes which overtopped the wall by five or six feet had broken over its