

rising more than one or two centimeters above the face of the dune is the powerful corrasion to which they are exposed, for just where they project the attrition and scouring of the drift-sand are exercised with the greatest degree of energy. Upon digging into the dune beside them, we ascertained that each was merely the edge of a lamina, which permeates the dune throughout parallel to its steep leeward face. The fact that these laminae persist through the interior of the dune, and come to light again on its windward face is an irrefragable proof, that the dunes in which they exist do travel towards the west-south-west, as indeed one would necessarily expect from the direction of the prevailing wind. The fact that the big accumulations of dunes turn their steep faces towards the west-north-west is therefore to be accounted for by other causes; the individual dunes are at any rate directly subject to the winds, and turn their leeward sides to the west-south-west. The laminae of which I have just spoken bear witness also to the presence of precipitation, whether rain or snow, for it is unlikely that they owe their origin to the dew. Once or twice only, and then it was in the vicinity of the Tarim, did I observe rime-frost of a morning, the dunes on one occasion being almost white with it; but in the interior of the desert, where the atmosphere is very dry, I never once detected the presence of dew. And even though these laminae were caused by dew, one would expect to find both the projecting ribs and the laminae themselves not only lying closer together, but thinner, and they ought to have decreased in number from north to south, instead of first making their appearance, as they do, in the southern half of the desert. Their occurrence is indeed quite sufficiently accounted for by the falls of snow which we subsequently witnessed. When the snow melts, the steep slopes become wet. The dust which then falls adheres to the moist surface, and so serves as a cement or binding material to hold the particles of sand together. Moreover the sand itself contains other fine particles which, owing to the moisture, develop a greater attraction for the sand particles themselves. The intervals between these projecting ribs vary of course a good deal, but they are seldom less than one meter, and frequently amount to several meters. Hence there cannot be a doubt as to the mode of their origination; but as for the other phenomena connected with them, I regret to say I am not in a position to offer precise data. If we knew what was the amount, and so forth, of the precipitation, we should be able to calculate the rate at which the individual dunes travel, or if we were in possession of this last-mentioned datum, we should be in a position to make deductions as to the frequency of the snow-fall and rain-fall. But we are ignorant of both. And it is equally impossible to determine how far the harder laminae are produced by rain or by snow, or by both acting alternately. But a theoretical and continuous section of the dune, extending over several years, would, I feel sure, show that these harder strata recur at tolerably regular

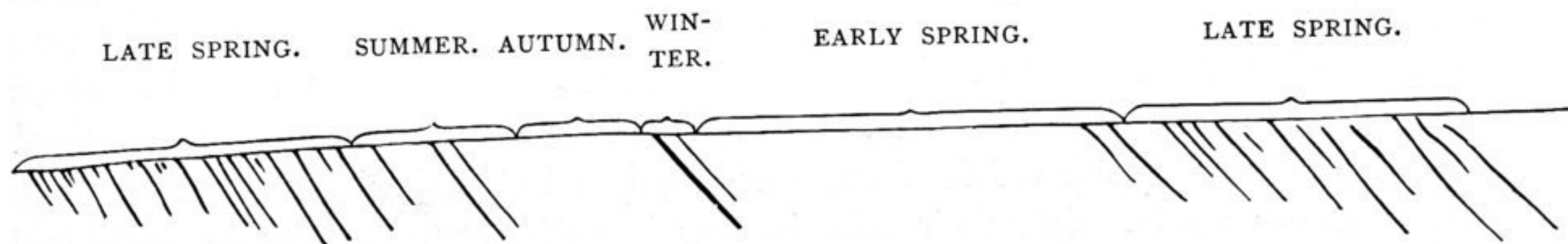


Fig. 274.