

troughs which narrowed towards the bottom. One measured cutting of average size was 13 feet deep and 8 feet broad on the east side, while on the west it narrowed to a few inches at its bottom. It is here that the concentrated force of the wind can apply itself with most effect to driving ahead the drift-sand and thus widening and deepening the breach. The drift-sand that is moved forward to the attack of the walls does not lie to any great height on their outside, and most of the gravel surface a little way off is quite bare there. But, once driven through these troughs, the sand accumulates under the shelter of the west or lee side of the eastern face of the wall, rising to dunes 18-20 feet in height. Whatever drift-sand is not retained by these sheltered dunes, or else released from them by particularly violent winds, is subsequently carried across the bare interior of the walled enclosure to be used afresh for its work of destruction on the west wall.

Progressive
effacement
of east and
west walls.

It is certain that the work of erosion thus proceeding on the east and west walls, which face the prevailing winds, tends gradually to join up the individual breaches and is bound in the end to efface these walls altogether. On the other hand, I convinced myself that the north and south faces of the walls, which lie parallel to the direction of those winds, have so far not suffered damage to any appreciable extent. Thus, if the erosive action now at work here continues long enough, the walled enclosure of this deserted town will after the lapse of some centuries present a precise pendant to that of the ancient Chinese station of Lou-lan, where the east and west walls have practically disappeared altogether, while I could still discover the traces of those to the north and south.⁸ It was, in fact, by the observations here gathered that I was first led to the right explanation of the features which on my first visit to that site had puzzled me greatly.

Varied pro-
gress of
erosion.

At the same time there was occasion to note here significant modifications affecting the progress and result of wind-erosion. Thus it is worth mention that the semicircular bastion in the front of the east gate of the abandoned town—a usual feature in Chinese fortification of recent times—has nowhere been breached, though in a few places its foot has been undercut by sand-scouring. Evidently the rounded exterior here presented by the wall suffices to reduce the effect of the scouring by diverting the drift-sand sidewise. That the surface conditions of the immediate vicinity are a factor of considerable importance in determining the extent of wind-erosion, even where the atmospheric conditions are identical, was brought home by a comparison of To-p'o-ch'êng, another but smaller ruined town, about 6 miles to the south-west of An-hsi. Though completely abandoned since the outbreak of the Tungan rebellion, if not earlier, this place showed practically no effect of wind-erosion on its walled enclosure. The explanation seems to lie in the fact that To-p'o-ch'êng, though situated on ground without present cultivation, is protected eastwards by the abundant low scrub which overruns the waste around and prevents the approach of drift-sand.

Wind-
eroded
modern
town walls.

An instructive illustration of the last remark, but in the reverse sense, is afforded by the walls of modern An-hsi itself. The town is surrounded on most sides by cultivation of some sort. But just on the east there approaches a belt of waste land with light drift-sand brought, no doubt, from the river bed and but loosely held by struggling vegetation. So it was scarcely surprising to find that the eastern town wall was in danger of falling through the onslaught of that relentless foe, the famous 'wind of An-hsi'. In order to prevent the top being breached by sand-scouring, this particular face had been protected, probably since the reconquest after the Muhammadan rebellion, with a solid stone parapet. This had served to some extent to ward off the attack above, though even thus a big dune, some 15-20 feet in height, had formed on the inside of that wall. But, baffled in its usual line of assault, the sand driven by the east wind was now asserting its destructive force on the clay rampart below, and in many places the undercut wall threatened to tumble before long together with the stone parapet.

⁸ Cf. above, pp. 386 sqq.