

of a framework of solid Toghrak timber, as seen in Figs. 150, 169. No wonder that, built with constructive methods so excellently adapted to the peculiar physical conditions of these desert marches, the ruined watch-towers of the Limes could brave wind-erosion and other destructive forces for over two thousand years.

Guard-rooms on top of towers.

I have already referred to the small guard-rooms still found on the tops of certain towers,¹⁷ and it appears *a priori* certain that some shelter of this kind, or at least a protective parapet, must have been provided on all for the men on guard, even though the broken condition or present inaccessibility of the top did not allow me to verify this directly. That access to the tops of the towers was necessary for observation and signalling is obvious. But there is also direct evidence of it in the remains of stairs still found at certain towers and in the foot-holds provided on others. There the men on watch were expected to clamber up to the top by means of a rope, a method I still saw in use nowadays at modern watch-towers of Tun-huang, Su-chou, and neighbouring tracts of Kan-su.¹⁸ Such foot-holds must have specially recommended themselves on occasions when the tops of the towers had to serve as places of safety from attack for the small detachments there stationed. In fact, even where stairs were provided it is very probable that they led up only as far as the roof of the quarters, whence the remaining height of the tower would have to be climbed by rope and foot-holds.

Defensive character of watch-towers.

In any case, such defensive purpose is directly attested by the frequent instances where big stones were found either still on the top, as originally stored as missiles, or else lying at the foot of towers after the top had crumbled away in ruin.¹⁹ Arrangements for this primitive but, under quasi-archaic conditions, very helpful method of defence could be observed everywhere on the walls of the fortified villages (*p'ao-tz'ü*) and farms with which the cultivated areas of Tun-huang, Su-chou, and other outlying tracts of Kan-su are studded. Even on the walls of Ch'ien-lung's imposing 'gate' castle of Chia-yü kuan I found this quaint ancient armament stored.²⁰ Any defensive value that the watch-towers may have claimed was limited to their use as places of refuge by the few men there stationed in the event of sudden irruption. That they could not have been intended for the active defence of the wall is also proved *inter alia* by the greatly varying distance between them and the wall. Where the distance was small, as at T. xxix, xxxii (19 and 26 feet respectively), the wall was made to curve round like a little bastion. Elsewhere, as at T. viii and xi, we find the wall passing the tower at distances of 24 yards and more.

Remains of quarters at watch-towers.

That the towers were regularly kept plastered and painted is proved by the successive layers of whitewash found on parts of their faces where they had been protected by the walls of quarters subsequently built on.²¹ The object, no doubt, was mainly to make the towers more visible from a distance at night or in the dust haze of windy days. Whether the quarters, of which remains could actually be traced below most of the towers, were always later additions could not be determined owing to the poor preservation of many of these ruins. But an examination of the plans showing the structural arrangement of the quarters, wherever it was still traceable with some degree of accuracy, suffices to show how extremely confined the accommodation ordinarily provided was.²² Even at T. vi. b, an important post, as we have seen, the space available within the extant quarters would scarcely have allowed more than a dozen men to find shelter with a minimum of

¹⁷ Cf. above, p. 737; also pp. 651, 711, 717, 721 concerning T. vi. c, xvi, xix, xxi, xxiii. a.

¹⁸ Stairs were preserved under the ruins of adjoining quarters, e.g. at T. iv. b, vi. b, viii, ix. a, xiii. Foot-holds could be clearly traced on towers like T. vi. c, d, vii.

¹⁹ Cf. above, pp. 639 sq.

²⁰ See *Desert Cathay*, ii. p. 277.

²¹ See above, pp. 645, 658, 681, as regards T. vi. b, viii, xiii. For the layers of whitewash found on the walls of posts on the Roman Limes in Africa, cf. Cagnat, *L'armée romaine d'Afrique*, p. 601.

²² Cf. Plans Pl. 34, 36-39 for the quarters of T. iii, iv. b, v, vi. b, c, viii, xii, xii. a, xiii, xiv. a, xvi, xix, xxvii.