

had its gathering-grounds and firn-basin to the west, and itself travelled east through the valley; and it is in consequence of this that the bottom is so smooth and level as we actually find it to be There, however, we are confronted with the difficulty of explaining the possibility of movement on the part of the ice-stream along what was practically level ground, or even somewhat rising ground.»¹

However, having studied the problem of the Tibetan lakes more thoroughly and compared the different theories concerning them, I now feel inclined to abandon the theory of their glacial origin completely. For even if this theory seems to suit the formation of the Panggong-tso very well, it is not sufficient to explain the formation of the hundreds of lakes spread over the Tibetan plateau-land. Further I do not think that Drew's theory of talus fans in the mouths of tributaries damming up main valleys can simply be dismissed, for in some cases such fans may have played a considerable part. The Panggong valley, not only the part of it that now is covered with water, but also its eastern continuation from Tso-nyak, has all the characteristics of a fluvial formation and the features of having been eroded by a considerable river. My soundings in the Panggong lakes, undertaken from the ice in the freshwater lakes, and from a boat in the western, salt-water lake, proved that the depth, as a rule, increases from east to west until it reaches its maximum with 47.50 m. in the western part of the Panggong-tso. Until a detailed measurement of the height of the threshold between the Indus system and the lake has been carried out, the real height of the threshold above the Panggong-tso remains uncertain. Strachey says the water-divide lies 100 feet above the lake, Huntington gives 90 feet, though I do not know by what means these figures have been arrived at. On December 22nd, 1901, I got an altitude of 4327 m., and on August 22nd, 1906, one of 4331 m., both by boiling-point thermometer and three aneroids. The altitude of the lake being 4317 m. according to my observations, the height of the threshold would be only 12 m. above the lake. As the maximum depth of the western part of the lake is 47.50 m., a talus fan of a thickness of 60 m. where it is lowest would be sufficient to dam up the valley and make the formation of a lake both natural and necessary. The progress of this process has obviously been gradual and periodical. As a rule the erosive power of the out-flowing river has been active at the same rate as the increase of the talus fan. During comparatively dry periods the erosive power has diminished, but the increase of the talus fan has continued, though at a much slower rate. At periods the lake has been cut off completely. During the next moist period the lake has again risen to the lowest part of the talus threshold then existing. Such periods of rise and fall of the surface of a lake on account of alternating moist and dry periods may still be observed in the Manasarovar

¹ Scientific Results, Vol. IV, p. 344.