

both lakes, indicating former higher levels, and an old river bed leading off from the north-east corner of Rakas-tal marks where formerly the waters issued from that lake to join the Sutlej River. Ryder believes that now both Manasarowar and Rakas-tal are entirely disconnected from the river at all times of the year.¹ Sven Hedin,² on the other hand, regards the two lakes as belonging to the drainage area of the Sutlej, and the Tage-tsangpo, the largest stream discharging into Manasarowar, as the head water of that river. He followed the old bed of the Sutlej River westwards from Rakas-tal, and came first to a large pool of fresh water, then to a series of fresh-water swamps connected by channels, and at length to a brook flowing south-westwards. The brook discharges into a large fresh-water pool with no visible outlet, but further on springs well up on the bottom of the old bed, and he is convinced that the water filtrates underground to these from Langak-tso.

A channel about five miles long connects the two lakes, and when the precipitation is abundant water flows from Lake Manasarowar to Rakas-tal. At all times, according to Sven Hedin,³ there is a connection by underground passages. Rakas-tal freezes in the beginning of December, half a month sooner than Lake Manasarowar; but it also breaks up half a month before that lake. Both lakes have ice 3 feet thick, but in the case of the former the freezing proceeds slowly and in patches, whereas the latter freezes over in an hour.

In winter the surface of Lake Manasarowar falls 20 inches beneath the ice, which is consequently cracked and fissured, and dips from the shore; whereas Rakas-tal sinks only one or two thirds of an inch: this is taken as showing that Rakas-tal is constantly receiving water from the eastern lake.

Manasarowar, 15,098 feet above sea-level, has an outline somewhat like that of a skull seen from the front. It measures about 12 miles from east to west by 15 from north to south, and has an area of about 110 square miles. Sven Hedin made in all 138 soundings on the lake, and found the greatest depth to be 268 feet. He also measured the amount of water discharged by each of the rivers flowing into Manasarowar, and calculated the total volume flowing into the lake as 1095 cubic feet per second, but considers that probably a volume of water greater than this surface supply is contributed by subterranean springs, fed by the melted waters of the glaciers on the mountains surrounding the lake. The temperature of one of these

¹ C. H. D. Ryder, "Exploration and Survey with the Tibet Frontier Commission," *Geogr. Journ.*, vol. xxvi. p. 388, 1905.

² *Trans-Himalaya: Discoveries and Adventures in Tibet*, London, 1909, p. 182.

³ *Op. cit.*, p. 168.