

junction, thus including all the water of the Kubi-tsangpo, Chema-yundung and Maryum-chu together. The river was divided by a little island into two branches of which the right one was a mere brook. The great branch was 48 m. broad, had a maximum depth of 1.28 m., an average depth of 0.722 m., an average velocity of 1.247 m. a second, and a volume of 43.20 cub. m. a second; the brook south of the island had a breadth of 4 m., an average depth of 0.215 m., an average velocity of 0.855 m., and a volume of 0.73 cub. m. a second. The whole river carried thus 43.93 cub. m. or precisely the same volume as the day before, 43.95 cub. m.

Immediately afterwards, I measured the northern branch, which contains the water of the united Chema-yundung and Maryum-chu. This branch had a breadth of 24.7 m., a maximum depth of 0.99 m. an average depth of 0.48 m., an average velocity of 0.84 m. and a volume of 9.97 cub. m. a second. As the whole river had 43.93 cub. m. there remains therefore 33.96 cub. m. for the Kubi-tsangpo; which makes, in round figures, 34 cub. m. for the Kubi, and 10 cub. m. for the united Chema-yundung—Maryum-chu. The Kubi-tsangpo is thus $3\frac{1}{2}$ times stronger than the Chema-yundung and Maryum-chu taken together. I had no opportunity to answer the question which of the two last-mentioned rivers is the greater. But this is of no importance whatever. Probably the Chema, as coming from glaciers, is greater than the Maryum-chu. With the first measurement the problem is solved without the slightest shadow of dogmatizing. The observations were made simultaneously. Had I measured one river at noon and the other at 5 o'clock the result would have been false. Had I made the observations during a rainy summer the result would not have been reliable, for more rain could occasionally have been falling in the catchment area of the one river than in that of the other. The summer of 1907 was very dry and everything was favourable for the hydrographic observations, the sources of error being almost entirely excluded. Under such conditions it was superfluous to ask the Tibetans of Shamsang for their opinion, but all of them agreed that the Kubi-tsangpo was the upper course of the Martsang-tsangpo or Brahmaputra. So it has always been and so it will ever remain.

The next step is very simple: to follow the Kubi-tsangpo to its origin!

From Shamsang it is a short march of only 6 km. to Umboo, Camp 197, at 4,702m (15,422 feet). The road follows the left bank of the Chema, including the water of Maryum-chu. The Maryum-chu splits up in a delta of 9 branches before joining the Chema. All these branches are crossed by the road. I measured them all, but the result has very little value, as the branches were not measured simultaneously. Moreover, from my road I could not control whether all these nine branches really belonged to the Maryum-chu. To judge from Ryder's map some of them seem rather to come from small Transhimalayan valleys, just east of the valley from Maryum-la. However, I believe my Tibetans were right in assigning them all to the Maryum-chu.

At Umboo, where green schist and schist-breccia crops up on the right bank of the Chema-yundung, these branches of the tributary water were measured. No. I