

regions, especially the Tien-schan, where amongst others Dr. Max Friederichsen has quite recently made exceptionally important observations, are well known, other regions are on the contrary but little known, a remark that applies with especial force to certain parts of the Kwen-lun. We are indeed acquainted in broad outline with the orographical arrangement, and even with the positions of the rivers amongst the mountains. But what do we know about the volumes of the rivers at different seasons, and about the relation of the volume to the precipitation, and of the precipitation to the other climatic factors? Little or nothing. Without arithmetical data we cannot in this connection proceed far; and especially of the volume of a river nobody but a trained observer is able to form even an approximate estimate, and yet how often do even such observers make mistakes. From the conventional phrase: »The river made a big and noble stream», it is impossible to deduce any conclusion, for there exists a strong temptation to call every river »big and noble» that occasions difficulty in crossing over it, as may indeed happen with quite a small stream. If, on the other hand, the crossing is effected under favourable and easy conditions, the traveller is apt to forget the true dimensions. But a description which tells us that »the river was at least 50 m. broad, a couple of meters deep, and that the current moved as fast as a horse walks», however defective it may be, does nevertheless give us some idea of the dimensions. But in the case of the upper waters of the hydrographical system of East Turkestan, even such succinct statements as this are all too rare, whilst of accurate measurements there are none whatsoever. In this respect therefore we have practically no data to go upon. All that one can say, speaking generally, with regard to a river like the Tarim, is that, when in its lowermost reaches, and at such an immense distance from its gathering-grounds, it still carries a volume of 140 cub.m. in the second, it must obviously be a stream of considerable magnitude in its upper course. For example, the Raskan-darja or upper Jarkent-darja is at Tong in spring several times bigger than the Tarim is at Jurt-tschapghan at the season of high water; and the Kontsche-darja, the continuation of the Chajdu-gol, has at Korla constantly the same volume as I have assumed for the mean volume of the united Tarim at Jurt-tschapghan. Nor can the united Tarim, with all its tributaries to help it, ever rival in volume that which the Ak-su-darja carries at its mouth at the period of high flood. In other words, the volume decreases rapidly from the sources towards the terminal lake, the reason being that the rivers, which go to make up the Tarim, do not receive a drop of water after they have once entered the lowlands, and have to sustain a fierce struggle against not only the drouthy deserts, but also the arid atmosphere. The former rob them of a considerable percentage of their volume all the way down, but especially in those parts in which the river has shifted its bed, leaving behind it an old, moist channel with plenteous forests beside it, while its new path is dry and absorbs vast quantities of water, and forests are perhaps entirely absent on its banks. But as the shifting of the bed is characteristic of the Tarim all the way down from the mouth of the Ak-su-darja, it is sufficiently obvious that this is one of the chief causes of the serious decrease in the volume of the river in its lower course. In a similar way the Tarim is deprived of immense quantities of water by the marginal lakes, for they vastly enlarge the area of evaporation. Moreover at the low-water season, when most of