

THE SOURCES OF THE RIVERS INDUS, SUTLEJ, GANGES AND BRAHMAPUTRA

BY

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SINCERE thanks and congratulations of all geographers and of Indian naturalists in particular are due to the Rev. Swami Pranavananda for publishing results of valuable explorations conducted by him during his four pilgrimages in the regions of Mt. Kailas and Manasarowar in Western Tibet. This trans-Himalayan district, lying just north of the Central axis of the Himalayas, held in great veneration by the people of India for 4,000 years, possesses the highest interest geographically, for it is the tract of mountains from which the four greatest rivers of India take their rise. This ground is sanctified by traditions going back to 2000 B.C., being mentioned with reverence in the Vedic hymns of the early Aryan settlers of India. There is reason to believe that this was the part of the Himalayas that the early Aryans were most acquainted with in the centuries following their migration to the plains of India. The beautiful, and in many cases highly expressive poetic names they have given to the peaks, passes, rivers and glaciers of this part of the Himalayas are reminders alike of the courage and enterprise of the Aryan pilgrims as of their love and admiration for the mountains and of their familiarity with them. Few other races of the world have at such early age in history adored mountains and snows, or enshrined them in poetry or mythology; for in most parts of the world mountains were regarded with horror and dread, to be shunned by all decent people for the ordinary pursuits of life.

Judging by the dimensions of the mountain-areas they drain, the four rivers, Indus, Sutlej, Karnali (the longest of the head-tributaries of the Ganges), and the Brahmaputra are the most important Himalayan rivers that drain the everlasting snows on the Indo-Tibetan water-shed and discharge their fertilising waters on the dry plains of India. The sources of these noble rivers, in the sense of modern geographical knowledge have, for over a century, been the subject of controversy among explorers,

naturalists and the official surveyors of the Government of India. Although traditions and immemorial beliefs of the early Aryans, which must have had their origin in the explorations of the more intrepid mountaineers among the annual pilgrims, had already accumulated some remarkably accurate facts about the origins of these rivers, this knowledge was so enveloped in mythological and legendary fancies that for geographical purposes it was as good as a sealed book. In 1790 Major Rennell, the Surveyor-General of Bengal, published a map in which the 800-mile course of the Ganges above Hardwar was shown to pass through Kashmir and Ladakh! Since then a number of official surveyors as well as explorers, both of the Survey of India and of foreign countries,—Captains Raper, Webb and Herbert; the Chinese explorers Klaporth, Rhurs, and D'Anville; W. Lloyd and Alexander Gerrard, Henry Strachey, Sandberg, Pt. Nain Singh and Col. Ryder from India have each made contributions in discovering the heads of tributary-streams, springs or glaciers which may be claimed as the sources of these rivers. Sven Hedin, the reputed Swiss geographer, came late in a long line of distinguished Himalayan explorers and made extensive journeys in Tibet and Trans-Himalaya in 1907-10. Sven Hedin's great work, *Southern Tibet*, published in nine volumes in 1917 is, as mentioned by Burrard, a complete library of Tibetan geography and particularly of the region across the axis of the Kumaon-Nepal Himalaya, wherein he has unravelled a series of important facts of orography and hydrography. Among the many genuine discoveries revealing trend-lines of mountain systems and the inland drainage system of Tibet, Sven Hedin has also claimed to be the first to have found the sources of the Indus, Brahmaputra and Sutlej, for thus he speaks in one characteristic passage:

"... I revelled in the consciousness that, except the Tibetans themselves, no other human beings but myself had penetrated to this spot. ... Providence had secured

for me the triumph of reaching the actual sources of the Brahmaputra and Indus, and ascertaining the origin of these two historical rivers. . . . Not without pride but still with a feeling of humble thankfulness, I stood there, conscious that I was the first white man who had ever penetrated to the sources of the Indus and Brahmaputra. . . . No white man had ever seen its source (i.e., of the Sutlej) before now."

Later facts brought to light by Swami Pranavananda from his four long and arduous journeys during the years 1928-38 in the Manasarowar-Kailas region, involving a whole year's stay at one time in this inhospitable country, have raised some doubts regarding Sven Hedin's conclusions. Though not a professional geographer, the Swami has made a record of most interesting, accurate and painstaking observations of natural features and phenomena which provide valid data on the intricate question of fixing the sources of these rivers. The Swami's observations show some discrepancies and inconsistencies in Sven Hedin's discussion regarding the sources of the Indus and Brahmaputra. The sources of many great rivers are usually matters of dispute and long controversy, since the exact point of origin of what is to be regarded as the principal tributary may vary materially with the point of view adopted by the different observers, particularly if the river in question has, as is often the case, a multiple number of head-streams. Is it the head tributary with the largest volume of water, or is it the tributary with the greatest length of course from the water-shed, or the melting end of the glacier, that is to be regarded as the source-stream? Or is local tradition or immemorial belief of the people of the surrounding country to determine the source? It is only in rare cases that all the three factors combine to give the same result; usually it is one of the three that is of preponderating importance in deciding the issue. Sir Sidney Burrard, late Surveyor-General of India, has well cited an interesting example of this. "Some writers define the source of the river as the point of its course that is most remote from its mouth. Colonel George Strahan has shown that if this definition be applied to the Ganges, its source will not be Himalayan

at all, but will be near Mhow in Central India at the head of the Chambal!" Local tradition has proved in several cases a correct guide in deciding such questions, especially in the case of river sources held in sanctity for millennia and visited annually by thousands of pilgrims, who in their peregrinations (*pradakshinas*) visit every ramification of the head-stream to the glacier-feeders.

Swami Pranavananda's book *Exploration in Tibet* (University of Calcutta, 1939), deals with the Kailas-Manasarowar part of Tibet, a region of sublime beauty and grandeur, encompassing some 3,500 sq. miles of country, a medley of high mountains above 20,000 ft., lakes and glaciers, which is the nourishing ground of the four greatest rivers of India. From his camping quarters in a monastery on the south shore of the twin-lakes Manasarowar and Rakas Tal, the Swami had unique opportunities of surveying the country around and investigating the merits of the various rival theories as to the sources of these four rivers, which all lie within a radius of 30-60 miles from his camp at the monastery of Thugulo. In his book Swami Pranavananda discusses all the relevant facts about the sources of the rivers Indus, Sutlej, Karnali and Brahmaputra as fixed by the previous observers and by Sven Hedin and presents a fair picture of the state of the controversy before he commenced his own investigation during his numerous *pradakshinas* round the foot of Mt. Kailas and the shores of the holy lakes. Although the last word cannot yet be pronounced on this subject without examining the bearings of the various physiographic factors involved and measurements of the various courses and the quantity of water carried by them, the conclusions to which the Swami has arrived are likely to meet with the approval of most geographers. After actual verification by personal observations of the actual sites he accepts the judgment of hoary tradition and sums up his conclusions as:

"... the source of the Sutlej lies in the Kanglung glaciers, east of Manasarowar, 65 miles from Barkha.* The

* Barkha or Parkha is a post stage and official Tibetan transport agency station situated one mile north of the north end of Rakas Tal (*Rakshas Tal*).

source of the Indus is in the springs of Senge Khambab (half a mile north of Bokhar Chu), north of Kailas, 53 miles from Barkha. The source of the Brahmaputra is in the Chemayun-dung glaciers, two days' march east of the Kanglung glaciers or 92 miles from Barkha, and the source of the Karnali is at the Mapcha Chungo spring, about 23 miles north-west of Taklakot."

This conclusion will be generally acceptable to future investigators, for it leaves the question open for the adoption of other criteria for fixing river sources after the necessary exact and quantitative estimations have been carried out. Other glaciers, springs and divides may then be regarded as the sources of these rivers, though the change is not likely to be very material in two or three of these rivers. But even when this is done, the terrain in the immediate periphery of Kailas-Manasarowar will still remain the nidus, or cradle of four of India's largest rivers.

A paper containing the resume of Swami Pranavananda's observations was read at a meeting of the Royal Geographical Society, London, and although it aroused curiously little comment at the time, at this one of the world's most important centres of geographical enlightenment, it is apposite to conclude this note with the remarks made at this meeting by Dr. T. G. Longstaff, the celebrated Himalayan explorer and surveyor. While expressing himself in full agreement with Swami Pranavananda's acceptance of the traditional sources of the four rivers the veteran Dr. Longstaff said, "It savours of impertinence for Europeans to assert their views against the usage of other civilizations". And in this tribute by him to the Swami all acquainted with travel in the Himalayas will heartily concur:

"Those who have travelled in Tibet must admire the character of the Swami, displayed by his omission of all reference to the hardships he must have suffered during his winter journeys in this inhospitable region."

BLOOD GROUPS OF THE BHILS OF GUJARAT

BY

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THE Bhils and the Chenchus have been found to be racially akin on the basis of the coefficients of racial likeness worked out from Dr. B. S. Guha's measurements.¹ Otherwise also, the Chenchus are popularly known as the closest relations of the Bhils, but they differ very much in their blood groups. Macfarlane tested 44 bloods from the Bhils of both sexes in the Kannad Taluk of the Aurangabad District in the extreme north-east. She found 31.8 p.c. O, 13.6 A, 52.3 B and 2.3 AB. This result if corroborated should be considered highly significant. "It may be", writes Macfarlane, "that in the Bhils we have one of the reservoirs of group B in India from which it has percolated to higher social castes, for the Bhils have an ancient tradition as soldiers and artisans".² In another paper on "Blood Groups in India"³ Macfarlane has recorded the blood groups of 140 Bhils and she found 18.6 p.c. O, 23.6 p.c. A, 41.4 p.c. B and 16.4 p.c. AB. I do not know where this group was examined, as the reference

given in the paper does not mention it. The large incidence of B, 52.3 p.c. in one case and 41.4 p.c. in another, could be explained if we took the Bhils as a highly heterogeneous group, for according to the data available the B percentage is found higher among mixed groups and may have something to do with hybridization.⁴

At the invitation of the Gujarat Research Society and in collaboration with Dr. G. M. Kurulkar, Professor of Anatomy, S. G. S. Medical College, Bombay,⁵ I have recently done some anthropological investigations among the Bhils of Gujarat (Panchmahal District) and the bloods of 369 Bhils of both sexes were typed by me. The data from the Bhils give the following percentage distribution: 37 p.c. O, 27.5 p.c. A, 26.0 B and 9.0 AB. Macfarlane's estimate of B concentration could not be corroborated and we have therefore to seek for "reservoirs of group B" elsewhere than among the Bhils. The large amount of B among the Bhils living in the hilly