

SCIENTIFIC MOUNTAINEERING IN INDIA.¹

H.R.H. the Duke of the Abruzzi undertook this expedition chiefly in the hope of contributing to the solution of the vexed problem

Saddle, 20,784 ft. On July 12 a height of 23,458 ft. was attained, but bad weather forced them to retreat. On July 17 another start was made, and that evening they pitched their two diminutive



FIG. 1.—Jhula bridge at Karmang. From "Karakoram and Western Himalaya."

Mummery tents at 22,483 ft., the highest strictly authenticated camp to date, though Rubenson and Monrad-Aas probably camped as high on Kabru.

Next morning at 5.30 the Duke, with the guides Petigax, Henri and Emil Brocherel, started on what they realised was the final assault. At first all went well. But as they climbed mists settled on the mountain, and the snow got so soft that they sank in 2 ft. or more at every step. Yet "their fatigue was not very great" until at 24,278 ft. they reached a steep outcrop of rock. "Directly they had to climb with

as to the greatest height which can be reached by mountaineers. But, as usual, he supplied himself with such a staff as would be able to make good use of every opportunity which his journey might afford for scientific research. The basin of the Baltoro glacier was chosen for the attempt, owing to the number of high peaks at its head. K² itself proved to be unclimbable, in spite of several strenuous attacks and much close reconnoitring, and on July 1 the Duke turned his attention to Bride Peak, 25,110 ft. Such were the unexpected difficulties encountered that it was not until July 10 that camp was pitched on Chogo Lisa



FIG. 2.—Southern view of K². From "Karakoram and Western Himalaya."

hands as well as feet, great difficulty in breathing became apparent," and it cost two hours to reach the highest rocks at 24,600 ft. A steep corniced snow-ridge stretched vaguely up into the mist.

The recurring tragedies on the Lyskamm are

¹ "Karakoram and Western Himalaya, 1909: An Account of the Expedition of H.R.H. Prince Luigi Amedeo of Savoy." By Filippo de Filippi. With a preface by H.R.H. the Duke of the Abruzzi. Vol. i., pp. xvii+469+plates; vol. ii., plates and maps. (London: Constable and Co., Ltd., 1912.) Price 63s. net.

an eloquent warning to all climbers against persistence in face of such dangers. The Duke waited vainly for two hours in the hope that the mist would lift, but at 3.30 p.m. was forced to retreat. Fortune was against the attainment of the highest peak—and in high mountain and polar regions weather is fortune—but the “man-level” was raised by 700 ft.

It is almost impossible for the uninitiated to realise the courage and fortitude called for by such a feat. For seventeen days they were never below 18,000 ft., and of these nine were spent at or

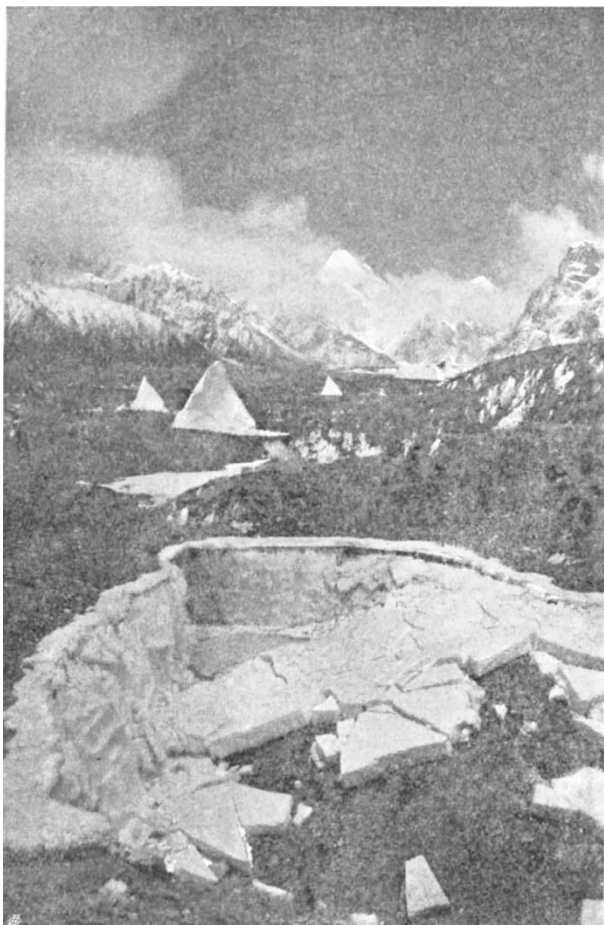


FIG. 3.—Empty basin of glacial lake. From “Karakoram and Western Himalaya.”

above 21,000 ft. None of the party suffered from mountain sickness, and it is obvious that the limit of man's endurance has not yet been reached. The barometer stood at 12'35 in. : a further drop of only about 1'6 in. would be registered on the top of Mount Everest. But the successful aspirants will be very exceptional individuals—and of a consummate resolution

Dr. de Filippi has produced much more than an interesting and readable account of a memorable mountaineering expedition. Almost every chapter gives him occasion for the discussion of

some branch of physical science. He appears to be familiar with the whole of the literature of his region, and gives so many references to the writings of his predecessors and other authorities that his book has the further merit of being, in the best sense, a work of reference.

The author's suggestive discussion of the past history of the Indus valley is of particular interest, but cannot be dealt with in this brief notice. Naturally glacial phenomena occupy most of his attention, and he throws new light on several vexed questions. The puzzling fact that the greatest glaciers of this region lack terminal moraines is ascribed to the immobility of their lower reaches. In a very long glacier lying in a narrow trough any increment shows itself by a rapid advance of the snout. The glacier overshoots itself, and if the increment is only temporary and the excess of pressure abates, this overshoot portion becomes, in effect, merely a mass of stagnant, dead ice. Rickmers has reached, quite independently, a similar conclusion in regard to some of the glaciers of Russian Turkestan. Probably the few large boulders which do reach the snout of these great glaciers quickly sink below the surface of the water-soaked plain of glacial débris which is such a typical feature at the snouts of most of these glaciers.

The fact that the most careful barometric readings consistently gave lower values than trigonometrical observations suggests a reference to variations in gravity. It is by research on the lines adopted by Burrard that we may eventually look for an answer, and this problem is one of the many which the author has placed on the programme of his expedition to Baltistan and Ladak for 1913-14.

The author agrees with Ujfalvy in ascribing to the Baltis an Aryan rather than a Mongol ancestry. It is pleasant to read of the excellent relations existing between the Italians and their Balti coolies, for whom the author has nothing but praise and admiration, and to whom he frankly acknowledges much of the success of the expedition was due. The geological results are specially dealt with in an appendix. The most striking discovery was that the main axis of the Gasherbrum range consisted of sedimentary rocks, notably conglomerates and marbles. These are continued into the Teram Kangri range north of the Siachen glacier, and quite probably still further to the eastward.

The narrative is enriched with numerous illustrations by Vittorio Sella, that prince of mountain photographers; it is impossible to praise them too highly. In a separate case, uniform with the narrative volume, are placed a very remarkable series of large panoramas. These with the maps combine with the letterpress to give an extraordinarily vivid description of the region dealt with, especially of the Baltoro glacier. A useful innovation is that the indices are placed in a loose fascicle along with the panoramas and maps, which obviates the difficulty of reference so distracting with a heavy volume.