

It was a matter of regret to us that we had not a hypsometer, and that the third aneroid met with an accident at the beginning of the trip. The other two, however, showed themselves at no time particularly erratic. The Cary would register about the same as the Watkin patent at 14,000 ft. After 17,000 ft. the former began to lose on the latter, and registered 100 to 200 ft. higher, according to the altitude attained. At Skardu, four days after the ascent of Koser Gunge, the Watkin patent indicated 80 ft. less than Casella's standard mercurial barometer. This was observed to be the case in other stations where comparison was made, the aneroid invariably indicating a less altitude than the mercurial.

The descent over the steep ridges and slopes to the boundary arête was not rapid nor easy in the still raging sleet-storm. After the hours of upward climb there were two or three of downward pull before we came to a place where a short meal could be taken. This was on a snow plateau, where we found the coolie trying to keep warm behind his load. Even here there was no rock or sérac to protect us while we sat for a few minutes with ulsters wrapped over our heads. We were 18 hours out and back to camp, a good two or three more than we should have been in fine weather. The effect of rarefied air was, as usual, distinctly noticeable upon the two of us when moving above 18,000 ft., but we undoubtedly suffered much more than we otherwise should have done because of the severe exertion required to overcome the resistance of the high wind and snow. Mountain sickness we did not experience, and I am quite sure that, apart from the natural difficulties of the mountain, the summit could be comfortably reached on a quiet warm day. It is, however, a peak which Zurbriggen says, under certain conditions, could not be climbed at all. If, for instance, the long slopes, ridges, and peak were frozen and icy, so that each step had to be carefully cut, time would fail for even the most expert guide to reach the top in a day. So, perhaps, after all Koser Gunge in a storm is better than Koser Gunge not at all.

THE EXPLORATION OF THE FURGGEN RIDGE OF THE MATTERHORN.

By GUIDO REY.

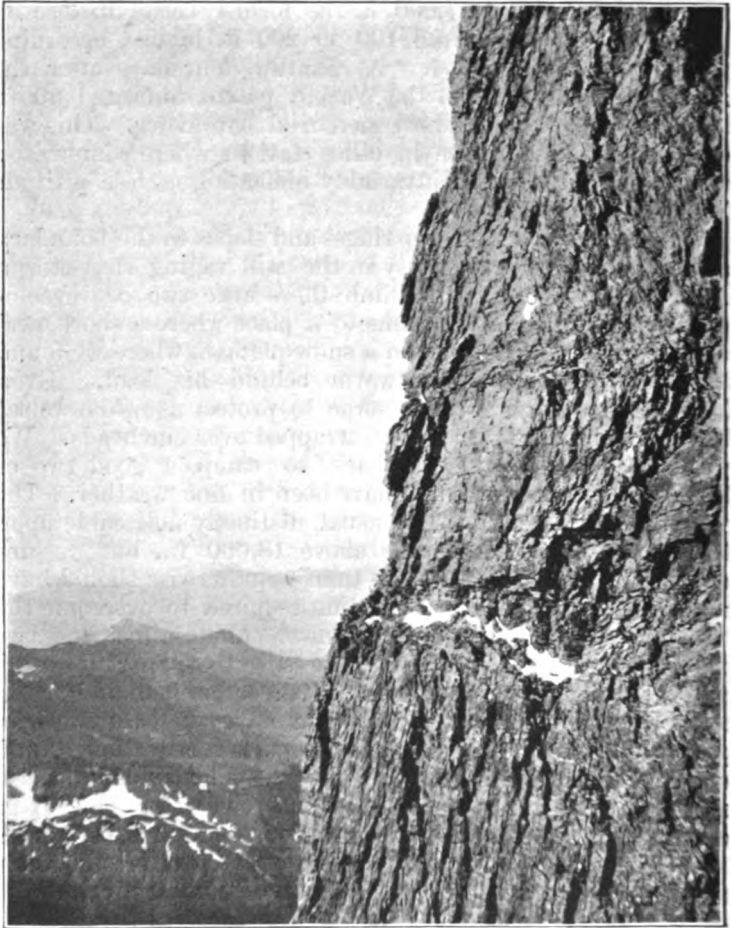
ON August 24, 1899, I started at 12.40 A.M. from Breuil, with Antoine Maquignaz as guide and Aimé Maquignaz as

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porter, and arrived at the Breuiljoch at 4 o'clock. After a little rest we attacked the ridge which descends from the Matterhorn direct to the Breuiljoch, and is called the Furggen ridge. The very commencement of the ridge presents some



THE FURGGEN RIDGE OF THE MATTERHORN.

difficulty, and could not be passed if the rocks were covered with ice. We, however, found them in very good condition. This pass is rather on the south (Italian) side of the ridge, and when we crossed it we found ourselves upon the

actual ridge, and continuing on this ascended as quickly as we could, as we were much exposed to stones falling from the upper rocks of the Matterhorn. (In 1890 I had experienced on the very spot a 'cannonade' which lasted some hours and forced me to return.) At 10 o'clock we reached without difficulty or danger the highest buttress of the ridge well seen from Zermatt and from Breuil. This point may be called the *Epaule de Furggen*.

I may add that Mummery in 1880 reached this point, and from here began the traverse which led him to the Hörnli ridge.

From this point began the real difficulty of the ascent. I knew that it would be impossible to ascend without the aid of a long rope placed higher up, about half-way from the summit of the Matterhorn, as the rocks, which are very smooth, above the 'Epaule' become nearly perpendicular, and in some places overhang.

Therefore I had sent a party of men, led by David Maquignaz, to the top of the Matterhorn by the usual route, while we were resting on the 'Epaule.' This party descended from the summit down the Furggen ridge for about 85 to 90 mètres, till they found it impossible to continue the descent. There they fixed a long rope, letting it down to the place where we stood, which was 8 or 10 mètres below the Epaule.

Making free use of this rope, I and my men ascended some 80 to 85 mètres. During this ascent we found only three or four places where we could place our feet firmly and take a short rest. This portion of the ascent took us two hours. We thus arrived at a little platform where there was a small patch of snow. From there we could see at a little distance (about 12 to 15 mètres) the heads of David Maquignaz's party.

But though the actual distance was not great, it was an overhanging wall of rock which separated us. We proceeded a few steps to the foot of this wall. Antoine tried to pull himself up by the rope (I refer to the rope fixed by David). This proved to be impossible, for the rope swung far from the rock under the weight of his body. We asked David to send down a knotted rope. He at once prepared this and sent it down. We made another attempt, but without success, as it was impossible to fix the rope at the foot of the wall, and the oscillation rendered our efforts to climb it useless. Had David brought a rope ladder we should in all probability have been able to ascend that rock face, and thus easily to have reached the summit.

We were, therefore, obliged to turn back. It was 5 o'clock in the afternoon. David and his men left their places, went to the summit, and descended to the Hörnli. Antoine and Aimé and myself conquered the difficult bit of 80 mètres, fixing, however, our own ropes, and descending by them. We climbed down the Furggen ridge all through the night—of course very slowly—arriving at Giomein at 9 A.M. on the morning of the 25th. I reckon that the point reached by us in this attempt is about 105 mètres below the summit.

Two days later I again left Giomein, and having slept in the Italian hut ascended to the summit.

At 9 A.M. on the 28th my guides and I began to descend from the summit by the Furggen ridge as far as the place reached by David's party on the previous occasion. From this point we managed to descend a few mètres further. We were then stopped by the well known overhanging wall. We here fixed a rope ladder, and by its means I descended the wall to the point that we had reached in the attempt of the 24th, and even went a few yards lower. I then reascended by the same ladder.

Thus I had touched every point of the Furggen ridge, and the exploration of the same was complete. Having reascended to the summit without difficulty, we hastened down by the Hörnli ridge, and, crossing the Furggen Pass, reached Giomein the same evening. When we left the summit of the Matterhorn it was about 2 P.M. The weather was very bad, and snow and hail were falling.

On this second excursion I had with me both David and Antoine Maquignaz.

My explorations demonstrated that the Matterhorn can be ascended by the Furggen ridge by using ropes and ladders fixed from above. I wish, however, to state that the ascent of the last bit is a very difficult one, even with the aid of ropes, and that the lower part of the ascent nearly always presents great danger from falling stones.

AT THE BACK OF THE TITLIS, AND OTHER PLACES.

By W. C. COMPTON.

IT is said, if I remember rightly, of one of the earliest mountaineers whose climbs have been recorded, that before attacking his first great peak he had led his flock to