

attempted an impossibility. Last summer was so exceptional in the great scarcity of snow, that the Mönch can hardly be said to have had a fair trial. With a reasonable amount of snow on the slopes which we found to be hard ice, I am fully convinced that the Mönch would be accessible in one day from the Wengern Alp, and I trust that the present summer may prove this opinion correct. H. B. GEORGE.

AN ATTEMPT TO ASCEND THE LYSKAMM from the
West. By A. W. MOORE.

EARLY in July, 1861, I arrived at Zermatt with Zacharie Cachat, unfettered by any engagement, and eager, like every mountaineer, for an expedition over new ground. Having weighed the claims of the various peaks still waiting to be attacked, we determined on trying the Lyskamm. Accordingly, I engaged Johann zum Taugwald to accompany us, and at 2.15 A.M. on Monday, July 8th, we started from the Riffel Inn. The weather was perfect: there was no moon, but the sky was thick with stars, and the comet was blazing away over the valley of St. Nicholas, lighting up the snowy peaks around with unearthly splendour. However, the narrow path which leads down to the Görnér glacier is not the best place for combining rapid motion with observation of the beauties of nature, especially in the dark; and several awkward stumbles kept this disagreeable fact fresh in my memory.

At 3.15 we reached the edge of the Görnér glacier, the pools in which were frozen hard, and crossed it to the point where the glacier of Monte Rosa and that of Les Jumeaux fall into the main stream. By this time the sun had risen, and we called a halt to discuss the route by which the Lyskamm should be attacked; Cachat and I knew nothing of the ground, and we therefore left the matter to Taugwald. At his recommendation, we determined to make the assault by the Glacier des Jumeaux.

Having put on the rope, we accordingly made for the left bank of that glacier, close under the black crags of the Schwarzbérg, and soon found ourselves in the midst of a troublesome piece of ice navigation. The glacier was wonderfully broken up; indeed, I have nowhere seen finer séracs, except perhaps in ascending the Jungfrau-joch. Although at this early period of the season the bridges were comparatively firm, the passage was difficult and exciting; but Cachat led with wonderful skill and sagacity, threading a way through mazes sometimes so apparently hopeless that we were almost tempted to retrace our steps, and try the Monte Rosa glacier; until, working dia-

gonally from the Schwarzberg towards the Lyskamm, we gradually emerged from the chaos, and at 6.15 halted for breakfast on firm snow, with no apparent difficulty for some distance in front of us.

While engaged in this most agreeable of meals, we had plenty of time to look about us, and the result of our inspection was not encouraging. Although where we were sitting there was scarcely a breath of air, it was evident that up above a furious wind was raging, as, from the summits of the Twins, and from the arête along which we should have to pass, the snow could be seen blowing away in clouds. Slightly discouraged, but by no means in despair, we resumed our march up the glacier, and for a considerable distance our progress was singularly easy and pleasant; the slopes were not uncomfortably steep, the snow was in first-rate order, and the temperature of the air was just cool enough to render a sharp pace agreeable. But at length, having worked our way upwards in the direction of the Twins, we once more found the glacier considerably broken up, not into a system of tolerably regular crevasses as below, but into huge towers and pinnacles of ice. These appeared at first sight an insuperable bar to further progress in this direction, but after an infinity of trouble a passage was found, and the difficulties were gradually left behind. Steep slopes of hard snow succeeded, on which the axe occasionally came into play, but generally a good kick was sufficient to give footing; on cresting the last of these slopes, we found an abrupt drop of some 15 or 20 feet, with a crevasse at the bottom. The ridge was very narrow, so, straddling it, we worked along to a point where there was no crevasse, and dropping on to the soft snow which had drifted against the side of the ridge, stood, at 10.15 A.M., on the narrow plateau of snow stretching from the Twins to the Lyskamm, which has since been christened by Mr. Wm. Mathews, the 'Col des Jumeaux.'

Having halted for a few moments, we turned to the left, to begin the serious part of the day's work, and after a very few steps were encountered by the most violent north wind I have ever felt, which blew the snow in clouds about our heads, half blinding us; the slope in front became rapidly steeper, and the plateau gradually thinned off, until it became a mere knife-edge of snow; on the right, the slope fell with fearful steepness to the western arm of the Lys Glacier, and on the left to the Glacier des Jumeaux, which we had just quitted. Keeping just below the arête, on the south side, we gained with difficulty a point where the ridge widened out sufficiently to allow us to stand on, instead of below, the actual edge. In front of

us stretched towards the great mass of the mountain the most remarkable arête I have ever seen. It was not a knife-edge, like the one we had just passed, but a ridge probably about a foot and a half broad at the top, and considerably thinner lower down, so that to all appearance it would only require a more than ordinarily violent gust of wind to send the whole upper portion flying down to the Lys Glacier.

The effect of this peculiar conformation was, that, in crossing, it would be necessary to keep on the very summit, exposed to the full force of the wind, instead of a little below on either side in comparative shelter. But by this time the violence of the wind had increased to such a degree, that it was only by driving our alpenstocks firmly into the snow, that we could keep our footing where we were standing; and, on seeing the nature of the arête in front of us, both the guides simultaneously declared that in such a hurricane it would be madness to expose ourselves on it, and that we must therefore turn. Under any circumstances I could hardly have persevered against their expressed opinion; but, at the moment, the cold caused by the wind was so intense, and the feeling of physical discomfort so strong, that no thought of disputing their decision ever entered my mind, and my principal feeling was one of relief that the *onus* of giving up was removed from my shoulders. Accordingly, at 11.30, we turned our backs on the Lyskamm, which, ignorant of its approaching fall before Mr. Hardy's party, doubtless chuckled at our defeat, and made our way down to the plateau. The height of the Col des Jumeaux is, 13,517 feet; the point where we turned is probably about 500 feet above this, or more than 800 feet below the summit.

The heat during the descent of the Glacier des Jumeaux was very great, and we could scarcely believe in the severity of the cold we had experienced on the arête; but a glance upwards, where the snow was still blowing away in grand style, showed that the state of affairs there was not altered. The passage of the séracs was rather more difficult than in the morning, many of the bridges having fallen away, but they were passed at last, and we reached Zermatt at 5.30 P.M. I am very doubtful whether, under any circumstances, the ascent of the Lyskamm from the Col des Jumeaux is practicable, without descending some distance on the south side of the col, as has been suggested by Mr. Mathews. From the point where we turned I could see no clear way up the mountain, even had we been able to pass the arête. Cachat and Taugwald, however, declared that, on a calm day, we could

have got up when once over that obstacle; and I believe that Mr. Tuckett, who made the same attempt in 1860, and was turned back by the dangerous condition of the snow, is of the same opinion. Of course, the peculiar conformation of the snow arête described above, is not likely ever to be encountered again, as the weather causes almost daily variations in the state of snow, especially in such exposed places. The Lyskamm will probably, however, always be climbed by the Monte Rosa glacier, since two successful ascents have proved that route to be at least possible; though it is so long and difficult, that an ascent by the way which we tried unsuccessfully, if practicable at all, cannot well be a more formidable undertaking.

THE GEOLOGICAL EVIDENCES OF THE ANTIQUITY OF MAN. By SIR CHARLES LYELL, F.R.S. Murray, 1863.

IT would be beyond the scope of the 'Alpine Journal' to discuss at any length the main subject of this valuable work; and we the more readily refrain from attempting to do so, as it would be impossible, within the limits to which we are necessarily restricted, to give an adequate idea of the amount of information which the author has brought to bear upon the geological records of pre-historic man. But in the course of his volume, Sir Charles Lyell has treated at some length on a matter which comes within our peculiar province; and a short account of what he has to tell us about the ancient glaciers of Europe, and especially of Switzerland, will not be out of place in these pages.

At the present day, glacier systems, or permanent accumulations of snow and ice, relieving themselves by an outflow into lower regions, exist only in few localities in Europe. But among mountains where now the winter fall is melted away by the first breath of spring, and over vast districts around, we find indications of former ice action on a gigantic scale. These indications are of various kinds. Rocks are ground, rounded, polished, and striated, as by the friction of substances rubbed over them with enormous force; heaps of unstratified mud and more or less rounded stones, often striated like the rocks, are found in positions analogous to those of existing moraines; huge boulders are scattered at a distance from their parent rocks, and sometimes perched in a singular manner in positions such as we often find them placed in on the edge of a glacier, but which it seems impossible to account for in any other way. In addition to these phenomena of mountain regions, we find extending over the greater part of Northern Europe, boulders and unstratified beds of clay and stones, such as must be deposited in the ocean on the melting of the huge icebergs, which loaded with stones and débris crowd the waters and imperil the navigation of northern seas.

There is evidence in the glacier traces found upon the highest mountains of Sweden that at one period the entire country was spread over with an uninterrupted coating of continental ice. The erratic