

such extremes of altitude. There is no doubt that they acclimatised much better than those with no previous experience. Several claimed that thin air was actually better for them than the thicker sea-level stuff! In explaining this, it seems reasonable to suppose that people who suffer from severe AMS do not usually return for a second dose, and that those who do return to altitude are therefore a self-selected group of naturally good acclimatisers. What does seem true is that a climber who has acclimatised well in the past will continue to do so on subsequent ascents.

I would like to place on record my thanks to the Himalayan Rescue Association who provided the facilities at Pheriche, to my wife who translated all the French, German and Japanese answers into English, and to Tashi Sherpa, veteran of dozens of Himalayan climbs, who made sure that the majority of trekkers paid us a visit. And thanks too to the trekkers themselves, some of whom may well read this article.

### Summary

The incidence and severity of acute mountain sickness was studied in an unselected group of two hundred trekkers at altitudes between eight and eighteen thousand feet.

69.5% of subjects suffered from some degree of AMS.

12% were forced to descend or required emergency evacuation.

A noticeable decrease in urine output at altitude meant there was a high risk of subsequently developing AMS.

Subjects suffering from jet-lag are more likely to develop AMS. The greater the time-zone change and the shorter the adjustment period, the higher is the risk.

The majority of subjects were ascending at a rate that most authorities would consider too fast. At these high rates of ascent there was no correlation between rate of ascent and symptoms except in the most seriously ill cases who may have continued to ascend fast even in the presence of definite symptoms.

Nobody ascending at less than 220 m per day suffered from AMS.

In a study of ten subjects, Diamox (acetazolamide) when taken as a preventative reduced the severity of AMS. It did not prevent it.

## One hundred years ago (with extracts from the 'Alpine Journal')

C. A. Russell

'By dint of very great perseverance we attained the summit at 3 p.m. The thermometer showed 10°F below zero. The view was magnificent beyond all anticipation. I had made the ascent three times during the summer, but not until the 31st of January had I seen it to perfection. The immense amount of snow on the Italian side added much to the grandeur of the scene.'

This account, in a letter to 'The Times', was given by Miss M. I. Straton

who on 31 January 1876 made the first winter ascent of Mont Blanc, accompanied by the guides Jean E. Charlet and Silvain Couttet and a porter. Miss Straton and her party were making the fourth attempt within a month to reach the summit by way of the Grands Mulets route; the first, on 12 January, by W. A. B. Coolidge and his aunt Miss Brevoort, with Christian Almer and one of his sons, had been defeated by a violent and sudden storm at the Grand Plateau while the second, 8 days later, by Gabriel Loppé and James Eccles, with 2 guides and 3 porters, had been abandoned at the same height due to severe wind. Miss Straton herself had reached the first Bosse on 29 January, too late in the day to proceed. Two days later she was able to spend half an hour just below the summit on the Italian side, sheltered from the terrible N wind.

Alpine conditions at the beginning of the year were the opposite to those experienced 12 months earlier. Throughout the winter months very little snow fell and in March an Italian mountaineer crossed the Old Weissthorn without meeting any serious difficulties. Early in April, however, a long period of bad weather set in and exceptionally heavy snow-falls during May delayed the climbing season for several weeks. Frederick Gardiner, who arrived in the W Bernese Alps on 12 June with Thomas Cox and the guides Peter Knubel and Peter Egger, found the Reusch Alp brilliant with masses of spring flowers but the higher regions covered with an inconvenient quantity of snow.

After climbing the Diablerets, the Wildhorn, the Wildstrubel and the Balmhorn the party moved to the Wengern Alp on 24 June and 'stoically endured bad weather for three days; but the 28th was fine, and we started for the Eiger by lantern-light at 2 a.m. The quantity of snow upon this mountain was something appalling, and I doubt whether we were prudent in attempting the ascent under such conditions; it was very laborious, and the rocks frequently glazed with ice, the cold was intense, and we had but little feeling in hands or feet when we arrived on the summit at 9.10 a.m. We did not remain there long for various reasons, the cold being the principal one. During the descent we had to use every precaution to avoid the courses of avalanches, and at one place, while looking back at our route, an avalanche of alarming dimensions crossed the exact spot where we had stood about ten minutes previously.' Gardiner recorded that on reaching the Grimsel Hospice on 3 July en route for Simplon the party found it 'surrounded by 30 feet of snow, all the outhouses destroyed by avalanches, travellers descending from the Mayenwand in sledges and the lake near the hospice covered with ice and snow.'

Before long, however, an improvement began which was to last until the end of the season. In the Bernese Oberland Henri Cordier, with Jakob Anderegg and Kaspar Maurer, made the first ascent of the SE ridge of the Finsteraarhorn on 15 July while on 31 July the summit of the Eiger was reached by way of the unclimbed S ridge by G. E. Foster, with Hans Baumann and Ulrich Riebl.

In the Pennine Alps on 15 August James Jackson, with Christian and Ulrich Almer, made the first ascent of the Mischabelgrat, the long and narrow SE ridge of the Täschhorn which rises from the Mischabeljoch. Any route on this mountain is a serious proposition and the ascent of the SE ridge



*94 Täschborn and Dom from the E. This and next photo: AC Collection*

with its magnificent views and delicate snow shoulder is a classic expedition. Other first ascents in the Pennine Alps were those of the N ridge of the Alphubel, rising from the S end of the Mischabeljoch, by Coolidge with Christian Almer, father and son, on 27 July, in company with Gardiner, the Rev. F. T. Wethered and M. Courtenay with Peter and Hans Knubel, and the W ridge of Mont Collon on 3 August by Gardiner and Arthur Cust with the 2 Knubels.

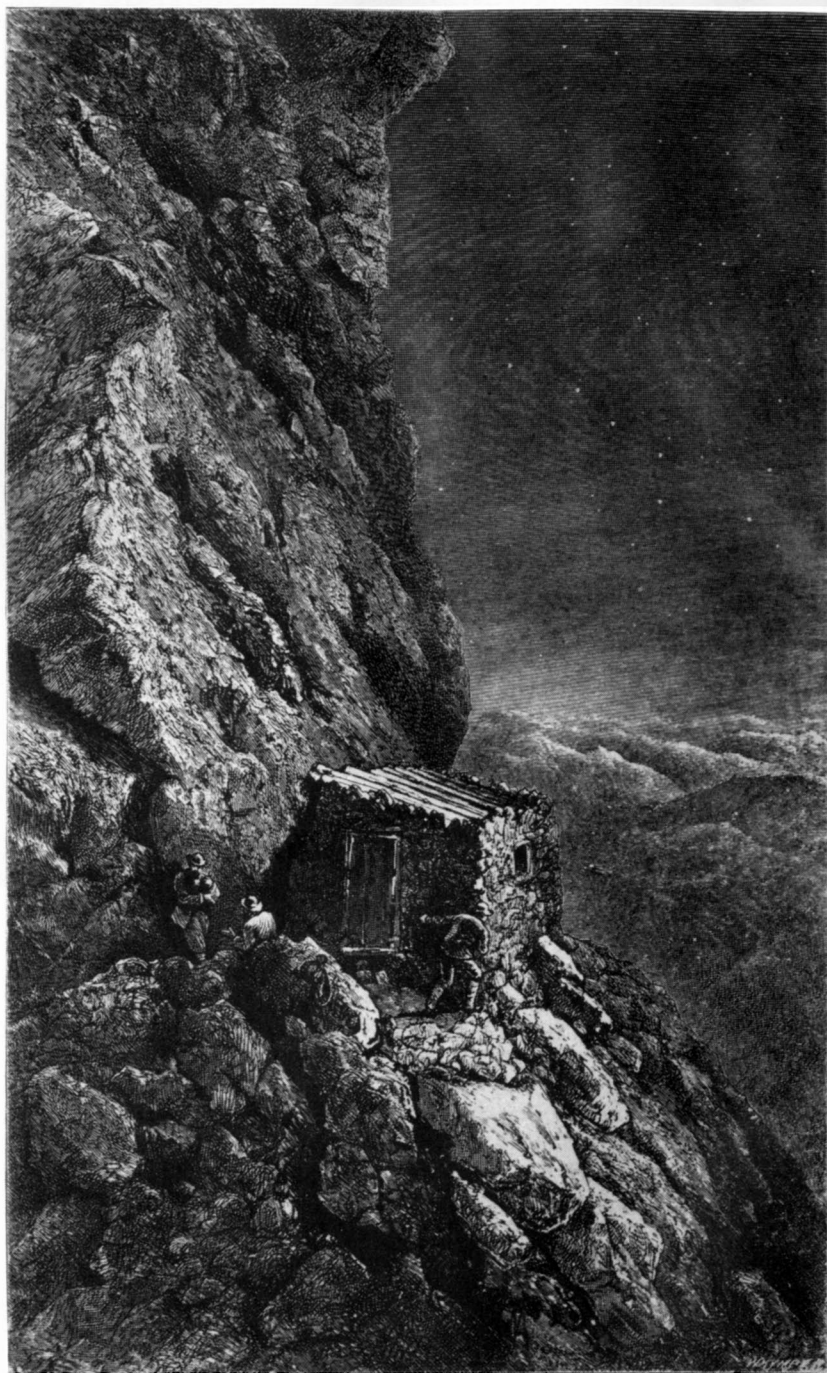
The first ascents of a more serious nature completed during July are worthy of special mention; a new route on the E face of Monte Rosa by Luigi Brioschi, with Ferdinand and Abraham Imseng, and the ascent of the Aiguille Verte from the Argentière Glacier by Cordier, Thomas Middlemore and J. Oakley Maund, with 3 guides. The Brioschi party succeeded in forcing a route direct to within 150 m of the summit of the Nordend by means of a rock rib and snow-slopes to the N of the Marinelli Couloir. Although less exposed to avalanches than the Marinelli route the Via Brioschi is a long and serious undertaking demanding great competence on snow and ice.



95 *The Aiguille Verte from the Argentière glacier*

The ascent of the Verte by way of the couloir later known as the Cordier Couloir, to the N of the Couturier Couloir, was also a remarkable achievement. Addressing the Alpine Club later in the year Maund recalled that he, Cordier and Middlemore had set out up the moraine of the Argentière Glacier in the early hours of 31 July, accompanied by Jakob Anderegg, Johann Jaun, Andreas Maurer and a fourth man 'whose chief characteristics were an extreme length of limb and a more than gloomy temperament.' Before long the party was reduced to 6 when the long and gloomy man, who had distinguished himself by breaking his ice-axe and consuming large quantities of brandy, suddenly discovered that he had got a stomach-ache.

The climb commenced at the bergschrund and nearly 2 hours had elapsed when the party managed to reach the rocks to the right of the couloir 'although their height above the "schrund" could not have been more than 300 feet. After a few minutes' rest we started again, keeping to the rocks on the right of the couloir. Our progress was slow, owing to their extreme difficulty, and to the fact that every few minutes footsteps had to be cut in the hard ice



96 Hut on the Matterhorn. A Whympfer engraving reproduced from AJ 9

that separated and often covered them. We proceeded thus for about an hour, until our way was barred by an impracticable slab offering neither hand nor foothold. So nothing remained for us but to cut across the couloir and try the rocks on the left. Luckily the ice in it was not as hard as we expected, and in a few minutes we were safe on the opposite side. The climbing here was most exciting, and but for the fact that the rocks were hard frozen would have been quite impossible. Every foot we gained, however, the difficulties increased, and we were again forced to cross the couloir. It was here no more than 40 or 50 feet wide, but it was terrifically steep, the ice was black and hard, and its width necessitated our all being in it together.'

After describing the subsequent ascent of the upper snow slopes Maund added that 'in my experience of the Alps I have seen nothing that will compare with the sustained splendour of this climb, either for sheer ice-work or difficult rocks; and I feel convinced that without the combination of good weather, good guides and good state of snow, it would be madness to attempt it.'

A further achievement during the same month is of considerable importance in climbing history—the first guideless ascent of the Matterhorn, by Arthur Cust, A. H. Cawood and J. B. Colgrove. In an account to the Alpine Club in the following February Cust described how the party, accompanied by 2 porters, set out from Zermatt on 22 July, 'certainly without an encouraging word from anyone, on an enterprise apparently regarded by others as of a rash or dubious nature. During the ascent Colgrove kept in front to show the porters their real character and the fact of our knowledge of the route.<sup>1</sup> The hut was reached at 6, and the porters returned the same night. No hut has been abused more than that on the Matterhorn.<sup>2</sup> I regard it as a very creditable production, considering its position and the difficulties to be overcome. A shelter from rock and rain, sufficient pots, pans, and blankets, an iron stove, are surely luxurious accommodation to a hardy man when the valley is 7000 feet below.'

Leaving shortly before 4am on 23 July the party found the climb to the shoulder far more difficult than that below the hut, partly no doubt because they tended to keep away from the ridge. 'A much greater selection of route among the various gullies and ridges was necessary than may generally be thought by persons who have accomplished the ascent in the ordinary way, and this part of the climb appeared both long and tedious. To facilitate our return we made small cairns at various points. It is astonishing what a difference there is in the consumption of time between following the unswerving trail of guides on a well-known track, and picking one's own hesitating way amid unknown and various details not without doubt and discussion.'

However, they reached the shoulder safely and with the aid of the chains which had been placed in position for the previous season the summit was reached at 9.35am. After 50 minutes the party moved carefully back down the slope. 'On starting to descend we thought it prudent to let out all our 100 feet of rope in order to allow of individual freedom on the chains; as a result we were sometimes out of sight of each other, and the guides exalted through

1 Cawood and Colgrove had reconnoitred the route as far as the hut 2 days earlier.

2 The original hut on the NE ridge stood near the crest at approximately 3820 m.

their telescopes, thinking we were unroped. We reached the hut at 3.30, and left it after a stay of about three-quarters of an hour, during which everything was cleared up and put to rights inside. The rest of the descent was tedious and slow, but we had the consolation of knowing that our victory, so long and dubiously contemplated, was won.'

The account was well received by the Club, and Coolidge, who was in Zermatt on the day of the climb, later described it as 'a wholly justifiable expedition. The three members of the party had all considerable practical acquaintance with the High Alps; they took every precaution as to choosing a day when weather, etc., were favourable; they did not try to make a "record" in any respect, whether as to time or anything else. None of them had ever been up the peak before, so that all the more credit is due to the success that crowned their efforts.'

In addition to their ascent of the Verte the Cordier party made the first ascent of Les Courtes on 4 August with the same guides and of the E summit of Les Droites, with Jaun and Maurer, on 7 August; the W summit had been reached for the first time by Coolidge, with Christian Almer, father and son, on 16 July. Other peaks in the French Alps climbed for the first time were the S summit of the Aiguille de Blaitière by R. Pendlebury, with Gabriel and Josef Spechtenhauser on 29 July; the Tour Noir by Emile Javelle and F. F. Turner, with J. Moser and F. Tournier on 3 August; and the Petites Jorasses on 23 September by M. A. Guyard, with Henri Dévouassoud and Auguste Cupelin.

In the Bernina Alps Cordier and Middlemore, with Jaun and Kaspar Maurer, made the first ascent of the N ridge of Piz Roseg on 18 August while in the Oberland, on the 21 September, the summit of the Gross Fusshorn was reached for the first time by a party including Miss Brevoort and her dog Tschingel; this was to be the last climb for both these Alpine veterans as Miss Brevoort died later in the year.

No account of the events of 1876 would be complete without reference to an historic achievement outside the Alps—the first and solo ascent of Store Skagastølstind (2405 m) one of the highest peaks in the Jotunheim<sup>3</sup> region of Norway, by W. C. Slingsby. In his book 'Norway: the Northern Playground' Slingsby recalled his first sight of the mountain 4 years earlier. 'The Horung-tinder<sup>4</sup> is undoubtedly the finest mountain range in Norway. We had heard practically nothing about it so our delight was probably greater and I shall never forget as long as I live my first view of Skagastølstind, the grandest European mountain north of the Alps. Our guide told us that it had not yet been ascended and that no doubt it was impracticable. Can it be wondered at that, when I saw the weird form of this mighty mountain in bright summer sunlight towering head and shoulders above her fellows—a score of sharp aiguilles of fantastic shape—I determined if possible, on some future occasion, to make the first ascent?'

Having made a careful study of the chosen route during a visit to the area with his sister Edith during the previous year, Slingsby set out for the mountain on 21 July, accompanied by his friend Emanuel Mohn, a Norsk school-master, and Knut Lykken, a guide and reindeer hunter. After a long

<sup>3</sup> Home of giants.

<sup>4</sup> Group of peaks in W Jotunheim.

approach, during which it was necessary to negotiate a heavily crevassed glacier and a steep snow-slope, the party arrived at a *skar*<sup>5</sup> at the base of the final tower. At this point Mohn and Lykken declined to go further and Slingsby felt that he was beaten 'as it is difficult to imagine any mountain presenting a more impracticable appearance than is shown at first sight by this peak from the *skar*. The *skar* consists of a narrow and flat ridge, perhaps 100 yards in length, of which one end abuts against a huge oblong tower of gabbro, the great peak itself. There seemed to be no proper arête to connect the peak with the *skar*, and merely a narrow face, mostly consisting of smoothly polished and almost vertical slabs of rock.'

On attempting the climb, however, Slingsby 'soon found that the rocks were firm; the ledges, though so tiny, were secure. The strata of the rock inclined the right way, downward from the out-face towards the centre of the mountain. Three times I was all but beaten, but this was my especial and much-longed-for mountain, and I scraped away the ice and bit by bit got higher and higher. In sight of the others I raised a cheer, which was renewed below, when I found that there was a ridge—a knife-edged affair—perhaps sixty yards long, and that the highest point was evidently at the farther end. There are three peaklets, and a notch in the ridge which again almost stopped me. For the first time I had to trust to an overhanging and rather a loose rocky ledge. I tried it well, then hauled myself up to *terra firma*, and in a few strides, a little above half an hour after leaving my friends, I gained the unsullied crown of the peerless Skagastölstind, a rock table four feet by three, elevated five or six feet above the southern end of the ridge.'

The solitary conquest of Store Skagastölstind is one of the epic feats in Norwegian climbing history and it is fitting that the conclusion to this summary of the events of one hundred years ago should be provided by Slingsby, who will always be remembered, both in Norway and in this country, as one of the great mountain explorers.

'All who are worthy of being termed mountaineers, in contra-distinction to climbing acrobats, find that year by year their love of mountains increases, and so too does their respect and veneration. They feel more and more, as they gain experience, that the sport of mountaineering—the finest sport in the world—is to be treated seriously. They will not deny the fact that with this sport, as with all other noble sports, there is a certain element of danger; but they assert with equal truth that, with forethought, prudence, and by putting into practice certain well-established maxims, these risks can be reduced to a minimum.

'The high mountains are the natural playground of those who are endowed with health and strength. They are the resting places for the weary. Then away to the mountains, away, away, and glean more health and strength of mind and body to enable you to combat the difficulties of life, and to lay up a rich store of happy memories from which you can always draw, yet can never exhaust.

'Yes, go and worship in "these great cathedrals of the earth, with their gates of rock, pavements of cloud, choirs of stream and stone, altars of snow, and vaults of purple traversed by the continual stars."'

<sup>5</sup> Narrow gap.