

CONCERNING IGLOOS.

By E. W. STEEPLE.

The joys of a camping holiday in the Alps have become much more fully recognised during recent years, but the base of operations is frequently at a modest level, with recourse to club huts when a mountain ascent is contemplated. What I have to speak of here is something rather different.

Mountains have been attacked in a number of ways. In the early days of mountaineering it was a fairly common practice to start direct from the valleys. The first ascent of the Dom, for example, was made from the village of Randa, a climb of 10,000 feet. The whole expedition took 14 hours—9 hours up and 5 hours down—and was done apparently without turning a hair. Some of those early explorers had legs of steel and lungs of leather.

The less steely and leathery made use of rude bivouacs, a simple and uncomfortable way of spending a night, very different to the tent bivouacs of the present-day. Water dripped on their noses during the night, and they arose in the morning feeling, as Leslie Stephen remarks, as if stuck all over with pebbles, like plums in a pudding. A light portable tent, if a bit of suitable ground on which to set it can be found, is a great improvement.

And then again there are igloos. Now, any of our members who have lived amongst Eskimos will know that an igloo can be made very comfortable, but their use in the Alps is rather a new departure, and I wish to draw attention to an article on this subject by Mons. L. Malavielle, which appeared in the May number of *La Montagne*, the periodical of the French Alpine Club. This gentleman and his wife, after experimenting with snow shelters at Val d' Isère and elsewhere, tried out the whole thing thoroughly last summer on Mont Blanc.

The first igloo was built at the foot of the Aiguille du Gouter, at a height of 10,500 feet. The second was on the arête of the Aiguille at 12,550 feet; the third on the Dome du Gouter at 14,100 feet; the fourth above the Grande Bosse at 14,800 feet, surely a sufficiently exposed situation; the fifth and last on the summit of Mont Blanc (this one was sunk partly below the surface). Altogether, 20 days were spent on the snow above 10,000 feet, the first two nights in a tent in order to compare the degree of comfort.

Now, in a period of settled fine weather the experiment would have been inconclusive. But it was a real and decisive test, for the weather was very far from being settled. On the Aiguille du Gouter there was a heavy thunderstorm. Lightning played on the rocks in the neighbourhood, and the cable running from the Tête Rousse to the Gouter hut appeared incandescent. On the summit of Mont Blanc, where they spent seven days, the weather was very bad during most of the time. There was thunder, heavy snow, a furious wind, the temperature outside the igloo fell at one time to -18° C., and visibility was nil. But inside the shelter the minimum night temperature hovered around 0° C., or 32° F., and its occupants were quite comfortable. They spent the daytime singing, playing games and brewing soups. When one is engaged in the latter occupation, and water is only obtainable by melting snow, with the least possible consumption of spirit, it will easily be understood that a good deal of time can be taken up in the preparation of meals.

Whilst on the subject of meals, it should be mentioned that the little party was entirely self-contained. No porters were employed, and no journeys made for fresh supplies. The matter of food was gone into with great care. It consisted largely of bread, dried meats, malt preparations, and "pooridge." Bread is one of the most troublesome things to carry up a mountain, and absolutely refuses to remain fresh. This difficulty seems to have been overcome by using "pain concentré," which is a new one to me, and worth investigating. I hope it does not mean hard tack.

In addition to food, and the spirit and stove, two light sleeping bags, two pneumatic mattresses, a ground sheet and a couple of lightweight tools for cutting snow were taken. The total weight carried, before the food supply was started on, seems to have been between 70 and 80 pounds, or less than 40 pounds each for two obviously tough individuals.

A complete description of the making of the igloos would take up too much space, but something must be said in explanation of the procedure.

The first of the two tools used was a *flat* shovel made of duralumin, without a handle, but with an arrangement for fitting it to the shaft of an ice-axe. The second was a "saw-knife" of the same material about 18 inches long, with large teeth.

The job is commenced by choosing (or making) a suitably level surface. On this a circle is traced—say, 8 feet in diameter. If a circular ground sheet is used, the tracing can be done with this. Alternatively, a ski stick may be stuck upright in the snow, the loop of a second stick dropped over it, and the second stick

swung round at snow level. One of the party stands inside the circle with the saw, to receive the blocks as they are brought to him. A suggested size for these blocks, which are cut out with the shovel, is 2 feet by 18 inches, and 8 inches thick. If the snow is light the thickness should be increased. With heavy snow a shorter block will be more easy to handle. The under surface of the first layer is trimmed to make the blocks lean slightly inwards, providing the necessary "batter" for a cupola-shaped erection.

When the first circle of blocks has been laid, its top surface, commencing, let us say, with block A, is shaved off diagonally with the saw all round, to form a re-entrant angle in the middle of A, about a foot deep. The first block of the second course is laid in this angle, and building proceeds in a gentle spiral. The effect of this is that the leaning blocks are wedged against each other, and do not fall on the builder. The only loose block is the last one to arrive, and this can be supported with one hand whilst it is being trimmed. When only a foot or so of space remains in the roof a "keystone" is placed over it, which, when trimmed to an inverted cone with the saw, drops into place. The constructor now cuts a doorway at ground level, and comes out of the building *without having entered it*.

The interior wall is scraped smooth, to avoid condensation drips, and all joints and cracks are carefully sealed up. Ventilation is provided by pushing the shaft of an axe through the keystone. The hole may be enlarged in fine weather. A useful addition is a porch built round the doorway. The door itself is simply a large block of hard snow. The author does not describe the process of shutting the door from inside, but it might be drawn in with a band of some material, wide enough to avoid cutting into the snow.

For a temporary bivouac a height of 4 feet would probably be enough, but for a longer stay it should be high enough to enable one to stand erect.

Now, this may appear to be a complicated and lengthy business, and no doubt some practice would be required before the thing could be done quickly. Mons. Malavielle, having had some experience, found that he and his wife took $1\frac{1}{4}$ hours under bad weather conditions, and he estimates that a party of three—one each for cutting, carrying and building—could do the job in 35 minutes.

Well, there it is. If any members care to try it out on Ben Nevis or the Cairngorms, at a suitable time of year, they will no doubt gain valuable experience in a variety of ways.