

New ice climbing techniques and equipment

John Cunningham and Bill March

Since the time of the Duke of the Abruzzi there have been no significant advances in ice climbing technique. The accepted method of climbing ice is to cut steps, especially on steep ice where a ladder of holds is hewn in a ponderous and time consuming effort. Smith and Marshall who dominated the Scottish ice climbing scene in the late 50s and early 60s, developed this traditional technique to its peak. They had the correct mental attitude and with the improved equipment available at the time they succeeded in producing some of the finest ice climbs in Britain, a few of which are still unrepeated. Nevertheless they made no significant break-through in techniques, but still used the now outdated method of cutting steps.

The new method is one which has been used to a limited extent within the traditional system for a number of years. Front pointing was used by some of the earlier climbers on easy angled ice and for short stretches of steep ice before 'psyching out' forced the cutting of holds. Once a hold is cut the need perpetuates itself just as the insertion of a piton perpetuates aid climbing. No one ever applied front pointing on steep ice seriously as a climbing method or took it to its logical conclusion, which is the complete elimination of step-cutting. It was in Antarctica that John Cunningham, working on icebergs and cliffs, developed the full potential of front pointing technique on steep ice (70-90°). The new technique is exacting both on the climber and on his equipment, its tolerance of error is small but once mastered it is a clean, fast and natural way of climbing.

Equipment

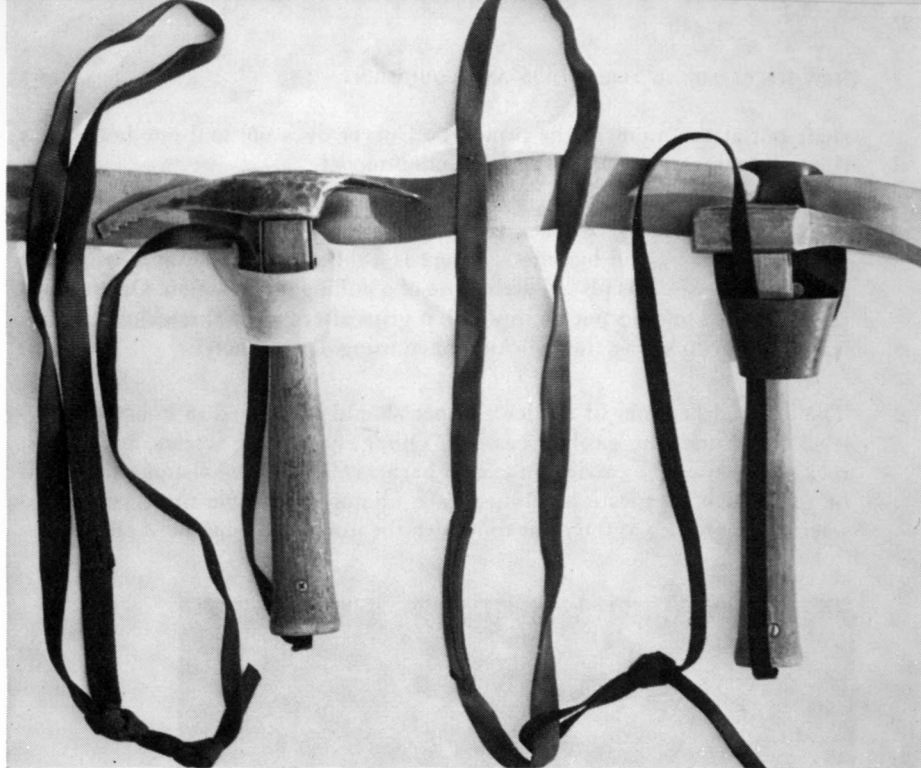
- 1 Crampons should fit perfectly with all tangs (uprights) sprung fit and the back bar clipping over the welt of the heel, thus preventing any movement. The conventional Salewa twelve point crampons are extremely good but will soon be replaced by a rigid crampon which should prove even better.
- 2 Sharp points. It is only common sense to keep all ice climbing gear sharpened to facilitate easy penetration into the ice.
- 3 Front points should be sharpened from the top not from the bottom.
- 4 Front points should be straight, not curved, and have an angle of inclination of approximately 45° downwards. These points are important as the foot is placed rather than kicked into the ice. A light tap is sufficient on good ice, whereas a hard kick will result in a simultaneous rebound effect and may also shatter the ice. Some people talk of prancing in crampons when really the movement is positive and firm. It is walking up the ice, with control the absolute essence of the operation. A direct analogy can be made with rock climbing, the climber keeps his heels down with the boot horizontal and moves by transferring the complete body weight alternately from one foot to the other. The

resolution of forces ensures that the body weight pushes the crampon point further into the ice. Any hesitation or timidity reduces the effectiveness of the purchase. If the heel drops too much the points slide out; if the heel is raised the points are levered out by the toe pushing against the ice. It is very important that the foot is not moved after placement as the ice may be fractured.

The great problem which retarded the utilisation of the front pointing technique was the necessity for some form of handhold on very steep ice (vertical and bulging ice). This was partially solved by using ice daggers which were thrust or hammered into the ice, and used as handholds. This was sufficient on short sections but on longer ice pitches falls were experienced using this system to its limit. The solution came from the American, Yvon Chouinard, who developed an ice-axe and a hammer, both with curved picks which hooked and held in ice. The axe shaft provided the necessary handhold. Cunningham realised the potential of both the axe and the hammer, which had a smaller thinner pick with better penetration and holding ability. The dagger and the hammer were thus combined as a single unit which provided the extra purchase required on long steep ice pitches.

The essentials of pick design are (i) The curve of the pick coincident with the axis of the swing of the arm to ensure maximum penetration. (ii) A thin, well-tapered pick giving greater penetration and less tendency to vibrate and shatter the ice. (iii) A set of teeth cut into the underside of the pick at the tip to prevent it slipping out.

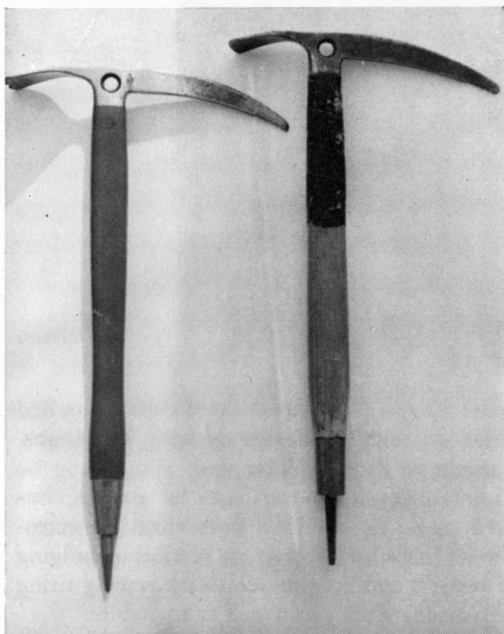
The axes which incorporate some or all of these features are: Mo Antoine Curver, the Chouinard/Frost, Eagle, Rawling; these may be regarded as specialist ice climbing axes. A hammer axe is also necessary as a climbing aid and for placing pitons and screws. It is basically an ice-axe with the adze replaced by a hammer head and all that has been said about pick design in axes applies to hammers. There are three ice hammers which fulfil the requirements, the Mo Antoine, the Chouinard and the Salewa hammer. All three are effective for hooking into steep ice. The Chouinard hammer penetrates well and holds on hard ice but it is sometimes difficult to extract. This is due more to over-driving on the part of the user than to inherent defect in the design. It must be levered up and down, not sideways, as the tip may break off. The Salewa hammer has a 'T' section on the pick and it is necessary to file this off at the point for better penetration. It does not hold quite as well as the Chouinard, but is slightly stronger and easier to extract. Both the Salewa and the Chouinard hammer picks bend and, with misuse, the latter have in some instances broken. The Curver hammer is in fact a Stubai North Wall hammer with an increased curve in the pick and a fibre glass shaft. It has proved to be very effective on hard (glacier) ice and is stronger and easier to extract than both the Chouinard and the Salewa hammers. All three hammers are without a ferrule and spike. The Chouinard hammer has a sling attached to the end of the shaft and this is worn across the chest. It is possible for a person to fall and be held by the sling from an inserted hammer. Indeed this may be the way to rest on long steep pitches or to place screws. The Salewa hammer has a sling attached to its



29 Left: Chouinard Adze-pick. Right: Chouinard Hammer Holster. This and next three photos: J. Cunningham and B. March

30 Left: Anthoine Curver Axe. Right: J. Cunningham's ASMU Himalaya modified model

31 Front-pointing on the Bossons glacier



shaft but at the moment the prototype Curver does not and one hopes that this will be incorporated in the production model

In contrast to the curved pick there is also the steeply inclined pick of the Terrordactyl axes and hammers. There is a different technique in using the inclined pick which is placed with more of a pulling down action. On steep ice the pick tends to cut a pocket in which it grips after two or three blows. There is a tendency to bruise the knuckles when using Terrordactyls.

The axe and hammer of the ice climber should be carried in holsters at hip level where they are easily accessible. Other equipment, screws, karabiners, rock pegs, should be carried on a chest harness clear of the holsters and should be grouped on separate karabiners (see photograph). One must be able to select the right peg at the right time with the minimum amount of effort.



32 *Gear harness*

Further developments in equipment may be the production of a short handled ice-axe with no ferrule or spike for use with a hammer on steep ice climbs. Chouinard has produced two prototype models. The shaft slings may be attached to a chest harness to facilitate resting; étriers may be used in conjunction with the tied-off inserted picks. In our view both steps are retrogressive although some form of wrist loops for support on vertical or bulging ice may be essential. Sections of vertical and bulging ice are extremely tiring on the hands, and a very tight grip on the shaft could lead to frost-bite.

The new method is not an easy way to climb ice and great demands are made on the climber. The acquisition of the new ice climbing equipment does not mean that difficult ice is open to all—one must train to acquire strength and confidence and develop an efficient front point technique. It is essential for the climber to be physically fit as the leg and arm muscles are subject to great strain on vertical ice. A strong mental attitude is necessary as the apparent precarious nature of the climbing induces 'psyching out'.

The sequence of teaching ice climbing at Glenmore Lodge as introduced by John Cunningham in recent years has been:

- 1 Front pointing without hands on short steep sections to improve balance.
- 2 Front pointing using hands on natural ice holds, gaps between ice and rock; climbing ice with rock technique—lay backs, bridging, jamming, mantel-shelfing and chimneying. The French technique is taught here, in conjunction with these moves.
- 3 The use of hammers on longer steep ice with screws as runners in place and the students leading. The hammers are introduced only after a considerable amount of front pointing work, as they tend to encourage poor technique in novices. It is important that leading is taught from the very beginning as the psychological considerations are greater than the physical. It is interesting to note that the novice students take to the new technique far more rapidly than the experienced climbers who have the ingrained habit of cutting steps.