'. . . every advantage that the wit of man can devise'

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G. I. Finch once wrote 'the climbing of Mount Everest is . . . very close to the limit of human endeavour. As such it calls for the exercise of every advantage that the wit of man can devise.'[1] I subscribe to this view. The odds against a clear run through to the top are so great that, if the simple aim is to reach the summit, then a few decisions have to be made about how to load the dice somewhat in favour of the climbers. It would seem difficult to do this at the present time without offending someone. This article is an attempt to anticipate some of the criticism that is bound to be levelled at any party attempting Everest in the next few years, and describe some steps that have been taken to prepare for it.

Here I will deviate at once from a logical approach by stating my preference for an unclimbed route. Why so? Climbing on the shoulders of our predecessors as we all do, so to speak, we have advantages both psychological and tangible. The knowledge that a route will 'go' can be immensely reassuring. However the challenge of a route that has not been climbed may be even more inspiring for some.

However much one deplores the mechanisation of climbing it makes sense to find out what the latest developments are and how they might be applied to, or improved on, for a route in mind. The highest Himalayan peaks have always been sieged. To alter this a climber would have to be capable of carrying a life support system able to last until replenishment was available. As technical climbing difficulty increases one or more of three things can happen. The number of men competent to continue dwindles. The weight of equipment required to overcome the difficulty increases. The duration of the operation increases. Either of the last two cause an increase in the weight of the support system.

I think many people see the next advance in Himalayan mountaineering as being an Alpine approach, a self-contained climber (perhaps one of a small group) gaining a summit unaided, traversing the ground but once, leaving no camps, requiring no ferries. Maybe Maurice Wilson in his lone assault on Everest was attempting the ideal, but he died in the attempt. To improve on this one must not die, nor indeed be injured in any way. The acclimatised Alpinist must carry food, heat, shelter and equipment to last him for say one week without being overburdened. Alternatively the wit of man can devise a few aids, such as siege tactics, fixed ropes, lighter oxygen apparatus. Developments continue apace and this summer on Indrasan, whilst giving many members of the Army Mountaineering Association a chance to see how they fared in the Himalaya, the 800 m high summit cone was shamelessly sieged for practice.

[1] Quoted by Peter Steele in *Doctor on Everest*.

A standing rope became the life line. Up it loads were ferried and climbers passed on their way to higher things. Down it they slid in the vilest weather, their return secured. The purists may say this was not climbing. But even they must concede that he who climbed it first was blameless. And for the rest, it differed only in degree from the drudgery of ferrying loads along a path stamped in the snow. We used a rope that did not stretch much. Climbing ropes are designed to be elastic, to absorb energy which makes them unsuitable for intermittent loading such as mostly occurs on all but a free prusik by a careful climber. Even though the stretch needs only to be taken out once with the weight of a climber hanging free, the rope could be sawing over a sharp edge. Fixed ropes are better if they do not stretch.

Our system on the wall was to use a team of four climbers. The first pair led in the usual way taking up the end of a second climbing rope. This was tied off at the end of each pitch for the use of the second pair of climbers who replaced it with fixed rope. About 150 m of rope was attached each day in this way.

Open circuit oxygen apparatus has been used successfully for over twenty years. The diluter-demand system developed by Duane Blume for the International Expedition in 1971 is available commercially from the USA. This provides useful economies in expenditure of oxygen but not of money. Each set cost new about £300. Technology has yet to reduce the weight of high-pressure cylinders to four times that of the oxygen which they contain so the logistic burden is still prodigious, of the order of one tonne of oxygen equipment to climb Everest.

Another method is to produce oxygen chemically using a portable generator containing sodium chlorate. This provides warm, moist, odourless oxygen which proves completely satisfactory. The set we tested was designed for aviators and had a limited duration but it is hoped to develop an eight-hour generator. No reducing valve or regulator is required which gives an additional saving in weight. The main disadvantage is that once ignited the reaction cannot be stopped. The method shows a potential saving in weight of almost 20% and in bulk of over 40% compared with compressed oxygen systems.

We tried out a wide range of constant flow and demand systems made in the UK, USA and France. It proved possible to use almost any of the equipment prusiking up the steepest walls at about 6000 m and gain benefit from the additional oxygen. It was appreciated that the extra oxygen was not necessary at that altitude although a noticeable improvement in performance was noted. The aim was to get a subjective assessment from as many climbers as possible on the use of oxygen apparatus during sleep and strenuous activity, with a view to using it in earnest on Everest. The most significant finding was that all the oro-nasal masks sampled severely obstructed downwards vision. This became particularly important for technical climbing for which it was necessary to see to place the feet. A satisfactory mask is now being sought.

By practising these techniques, far removed from alpinism as they are, we have hoped to gain a little advantage in the battle with Everest in 1976.