

Ruck Tent by A R Worrall

As a student of Design and Technology and a keen climber and Fell walker, Robert Worrall identified a need for a more substantial emergency shelter than the present plastic bivouac bag available to those taking to the hills, particularly in winter. From his own experience Robert felt that something more robust which would cover the whole body would provide greater comfort and moral for those unfortunate enough to become benighted on the hills in severe weather conditions. If somehow a tent with a sewn-in ground sheet could be combined with a standard rucksack, to be quickly erected and folded away without any great sacrifice of space and the whole equipment light enough for mountaineering purposes, then a most valuable piece of equipment would result. With this analysis it was soon realised that the equipment could double as a one-man emergency shelter as well as provide a rucksack and tent for hiking and camping. This was a problem worth a challenge particularly as early investigation revealed that no suitable piece of equipment was available on the market.

Early sketch ideas produced a variety of solutions and on paper many appeared feasible. Materials and dimensions were isolated as areas requiring in-depth investigation. A series of models were constructed using steel wire, canvas and cardboard. These were of enormous help in arriving at a final solution. Consideration of anthropometric data resulted in precise measurements being recorded. Also consideration of ergonomic factors led to the construction of a full size mock-up. A standard rucksack was used together with a stitched canvas tent piece. From this it was realised that the tension of the rucksack would not totally support the tent so that a two piece pole section was incorporated to stabilise the door end. The poles would form a U-shaped frame and when not in use would be easily clipped to the rucksack frame. Two short pole stiffeners would also be needed at the feet end. It was planned that the prototype would be made

from nylon in order to reduce weight, however, because of condensation and the tendency for such a material to sweat it would be necessary to provide some form of ventilation. From the mock-up a free flow air system was devised. Further it was discovered that separate items could be removed from the rucksack when the tent was erected and the whole structure folded easily and stowed in a pocket incorporated within the sack. Other items to be carried could then be packed in the normal way without interfering with the folded tent. It could also be removed first from the rucksack, in the event of an emergency or inclement weather.

An acceptable design had now evolved, a one-man shelter tent which was an integral part of a standard rucksack. The tent which is wedge shaped incorporates a canopy stretching from the top of the tent to the top of the rucksack providing extra shelter and stability. The construction of a prototype was achieved by a local company Lytham Leisure Products who specialise in the production of outdoor pursuits clothing and equipment. Using Robert's working drawings and full size templates the work was completed by a small team comprising of a production manager, assistant and a seamstress. Consultations took place during manufacture and the 'professional advice' proved extremely valuable, especially in terms of choice of materials.

The ruck-tent was now ready for testing and was subjected to a rigorous series of one-day and three-day treks across the Pennines of Yorkshire and the Lake District in Cumbria. The terrain and weather conditions in which it was set down varied in the extreme. The time for erecting the tent was perfected to approximately two and a half minutes. We can only conclude that the survivor or hiker would remain perfectly dry, comfortable and well assured until time or conditions would permit him to proceed.

The Rucktent, designed by Bob Worrall of Rossall School, is a one-man tent that packs up into a standard rucksack. The tent can be erected very quickly, even in windy conditions.

