



air cadets

the next generation

air cadet publication

ACP 31

general service training
section 4 - initial expedition training



Amendment List		Amended by	Date Incorporated
No	Date		
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Acknowledgement

The photographs of camping equipment, shown in Chapter 2 of this volume, are reproduced with kind permission of COTSWOLD 'The Outdoor People'

ACP 31

GENERAL SERVICE TRAINING

CONTENTS

Section 1 The Air Training Corps

Section 2 The Royal Air Force

Section 3 The Rifle

Section 4 Initial Expedition Training

Section 5 First Aid

Section 6 Communications

Section 4

Initial Expedition Training

Chapter 1 Hill walking

Chapter 2 Campcraft and Expeditions

Chapter 3 Exposure

Instructors' Guide

THE DEFENCE MISSION - 1999

The purpose of the Ministry of Defence, and the Armed Forces, is to defend the United Kingdom, and Overseas Territories, our people and interests, and to act as a force for good by strengthening international peace and security.

THE ROYAL AIR FORCE MISSION

The Royal Air Force Mission is to deliver air power in the most effective manner possible to meet the United Kingdom's security and defence requirements.

CHAPTER 1

HILL WALKING

1. As a cadet you will get many opportunities to take part in adventure training, either as part of your normal squadron training or as part of DofE. There is always an element of danger in outdoor activities, so the aim of this section is to give you some basic knowledge to enable you to enjoy outdoor activities safely.

Fig 1-1 Adventure Training



Expedition Planning.

Planning your expedition

2. This is the most important part of any expedition. Time spent on planning is never wasted. If you are the leader in charge of a group you will have many things to consider before the expedition gets under way. The first thing you must decide is how many people there will be in the group. This will depend on:

- a. The length of the route.
- b. The type of ground to be covered eg hills, moorland, rock ridges etc.
- c. The weather conditions - wind, rain, mist, snow.
- d. The age and fitness of the individuals.

How many people in a group

3. As a general rule hillwalking groups should number between 4 and 6 - the more difficult the route, the smaller the party. Four is the minimum safe number to take in normal country since in the event of an accident, one member of the party can stay with the injured person while the others go for help.

The route

4. Route Planning. This is where your skills at map reading are essential. In choosing where to go on your expedition, you must consider:

- a. Interest of the party. Are you setting out to visit a specific place, such as a lake or rock outcrop or are you simply trying to get to the top of a hill?

Fig 1-2 The planning phase



- b. How to get there. The direct route is the shortest but not necessarily the quickest. You should choose a route away from roads as much as possible - it is not much fun tramping along a road for hours (if the road is busy, it could be dangerous). Try to keep to public footpaths as far as possible and stay out of farmers' fields, especially if they have crops growing or animals grazing.

- c. The terrain. Take a note of the type of ground your route crosses. Marshy ground can be wet and miserable to cross and dense woodland can be slow and hard work to penetrate.

- d. Hills. Are there any hills to climb or can they be avoided? It can be very frustrating to climb a hill, only to find when you descend on the other side that there was a path following the contour around it.

Escape routes

5. When planning a route for any expedition it is important that you have alternative plans if things go wrong. For example, if it starts to rain heavily or somebody in the group is particularly tired you may need to cut the walk short - low cloud on a hill may mean a detour around it. You should try to think of all eventualities and never be afraid of turning back if the circumstances dictate.

How to get help

6. This kind of detailed planning is also important if you need help in the case of an emergency. Find out where the nearest telephone boxes are on the route or farms close by that you could go to for help if you need it. On later expeditions when

you may be in wild country, you should be aware of the positions of Mountain Rescue posts.

Walking Skills.

Naismith's rule

7. On roads or flat ground journeys are usually measured in miles or kilometres, but on the hills it is easier to measure journeys in hours. This will take practice and

Fig 1-3 Measure distance in hours



experience on your part to judge the pace of your walking. A rough guide when estimating the time of a walk for a lightly equipped party is to allow one hour for walking. You should try to get an average time for walking a distance of 1 km:

- a. On flat ground.
- b. Up a gentle slope.
- c. Up a steep climb.

The group acts as a single unit

8. Speed is of less importance than economy of effort. To hurry, except in extenuating circumstances, is foolish. 'Tail end Charlies' must be encouraged and

Fig 1-4 Ten tors - 55 miles over 2 days



not left to struggle on their own to become exhausted and depressed. Keep together and on no account send any member of the party back on his own. Except in dire emergency the party should act as a single unit. There is no set best position for the

Fig 1-5 *The group acts as a single unit*



leader of a party - at the front, at the back, or in the middle. The position the leader adopts will depend on the circumstances prevailing at the time. Normally, of course, as leader, you will be in front, having appointed the next most experienced member of the party to bring up the rear.

Walking rhythm

9. Rhythm is essential to good hill walking; jerky movements, springing and flexing the knees by taking too high a step tire the muscles and should be avoided. The leg should be allowed to swing forward like a pendulum; the natural swing of the body assists this movement. There should be no conscious use of the leg muscles. To assist rhythm and balance the hands should be kept free at all times. Spare clothes, etc., should be carried in the rucksack or tied round the waist.

10. To maintain rhythm, the same speed of pace should be used on all types of ground, the length of the pace being shortened for steep or difficult ground and lengthened for easy ground.

Set your feet carefully

11. The feet should be placed down flat with a deliberate step, resting the heels on any available projections such as stones or tufts of grass. Where the slope is

Fig 1-6 *Zig-zag up steep slopes*



steep, zig-zagging will assist the walker. Good rhythm and setting the feet is the sign of an experienced hill walker.

12. When descending, overstriding and putting the foot down heavily should be avoided as these jar the body and therefore tire the walker quickly. A controlled descent can be assisted by placing the toes against projections. A good walker uses downhill periods to rest the muscles.

General Tips.

When to rest

13. Constant stopping and starting breaks up walking rhythm and should be avoided. Halts should only be made at fixed intervals based on time and ground; these halts should be short, on average 5-10 minutes every hour. Large meals should be avoided 'a little and often' being the better approach to eating during a day on the hills. It is a good plan to retain a portion of the day's food until all difficult ground has been crossed and so maintain a reserve of food in case the unforeseen should occur.

Fig 1-7 Constant stopping and starting should be avoided



14. The body needs to replace fluid lost in sweat, in breathing, etc., and contrary to popular belief drinking is to be encouraged, 'little and often' once again being the safest maxim.

What to do in bad weather

15. Constant vigilance should be exercised, as weather conditions can deteriorate extremely quickly in hill country. Check the weather forecast before leaving. Changes of weather can produce serious problems for a walker, and great care must be taken that one does not over-reach one's ability. Most accidents due to bad weather occur through rashness. Act before the weather dictates its own terms.

Exposure

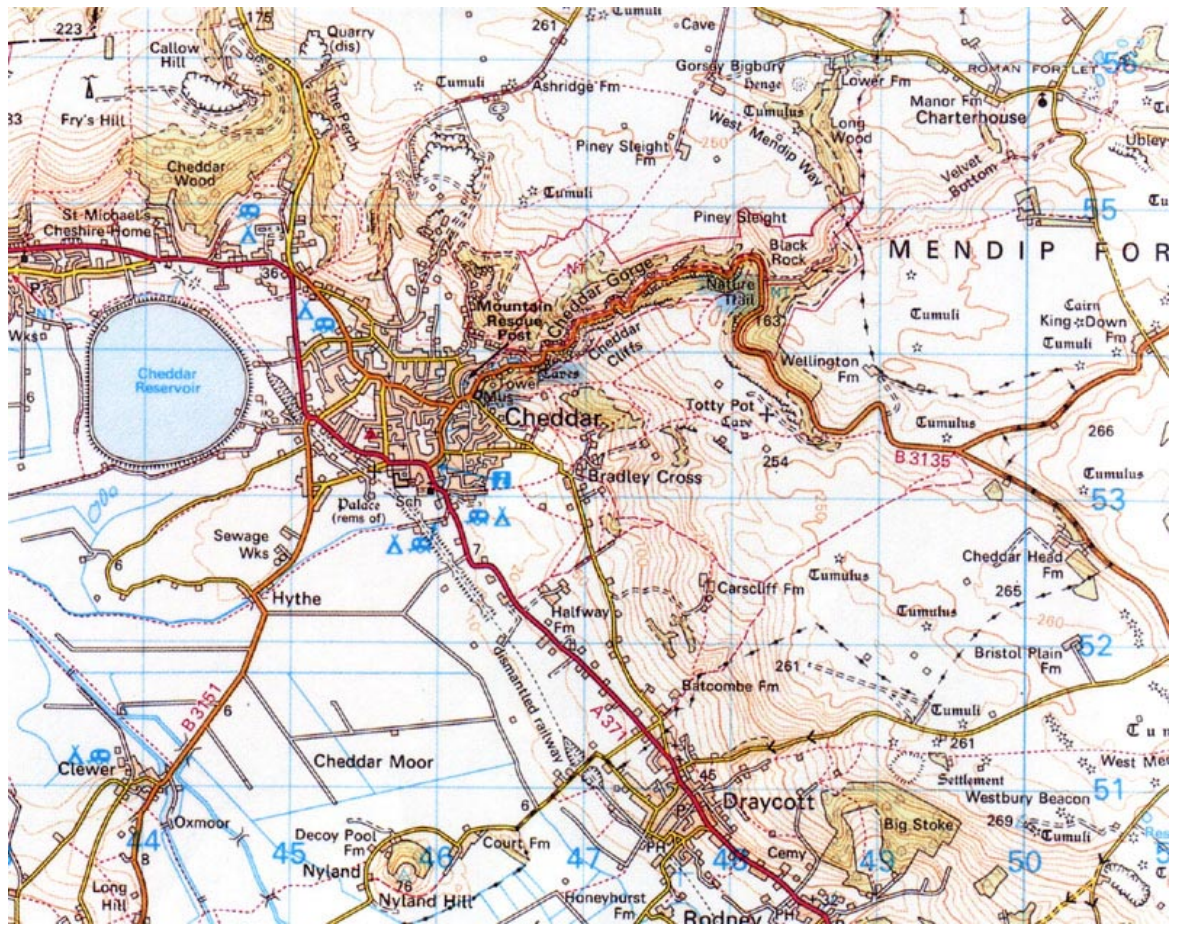
16. Exposure is an ever present danger with people in the mountains and all leaders must be familiar with its recognition and treatment. This will be covered in more detail in chapter 3. If your party is fit, dry, well fed and watered and in good spirit you have little to fear. If they are not, then you must modify your route to suit their condition and capabilities.

Route Cards.**Route cards**

17. Once you have planned your route it is a good idea to complete a route card, similar to the one show below. Divide the route into legs of about 1.5km to 2km in length with obvious landmarks to aim for. Enter each leg on a separate line on the route card and don't forget to include your escape routes. Once completed, the card can then be left with a base contact who can raise the alarm if something goes wrong. Remember, as soon as the expedition has been completed, CANCEL the route card by INFORMING THE PERSON HOLDING IT.

18. Most of the card is self-explanatory but your instructor will help if you need it - remember you are filling it in for some one else to read and use. Finally, copy the relevant parts of the route plan onto a postcard, protect it against the weather and take it with you in your map case.

ROUTE CARD (Use one per day)				NAMES OF GROUP MEMBERS						SQUADRON OR UNIT	
Date <u>24 September 93</u>		Day <u>1</u>		<u>GLENN, JACK, TONY, HELEN,</u> <u>ANDREA</u>						<u>HQ AC</u> ADDRESS <u>RAF NEWTON</u>	
Leg	PLACE AND GRID REFERENCE	Direction or bearing	Distance in km	Height above sea level	Time for leg	Time for stops	Total time for leg	ETA	Start time	Route details	Escape to:
	START										
	<u>VIA CHABOAR</u> <u>455 534</u>								<u>0700</u>	<u>SWEET 152</u>	
<u>1</u>	<u>TO Entrance of Gorge</u> <u>467 538</u>	<u>NE</u>	<u>1.2</u>	<u>50</u>	<u>20</u>	<u>-</u>	<u>20</u>	<u>0720</u>	<u>Along road to Museum</u> <u>Follow path to Gorge</u>	<u>Return along path</u>	
<u>2</u>	<u>TO Black Rock</u> <u>454 546</u>	<u>NE</u>	<u>1.5</u>	<u>150</u>	<u>30</u>	<u>10</u>	<u>40</u>	<u>1000</u>	<u>Climb path following Gorge</u>	<u>Return along path</u>	
<u>3</u>	<u>TO Arkledge Fm</u> <u>467 554</u>	<u>NW</u>	<u>3</u>	<u>60</u>	<u>50</u>	<u>10</u>	<u>60</u>	<u>1100</u>	<u>Follow path contouring the hill. Climb NW</u>	<u>Return to road B935</u>	
<u>4</u>	<u>TO Cheddar VA</u> <u>455 534</u>	<u>S</u>	<u>4</u>	<u>-</u>	<u>60</u>	<u>10</u>	<u>70</u>	<u>1200</u>	<u>Follow path to North of outcrop - descend the road at outcrop</u>	<u>Return via road South</u>	
<u>5</u>	<u>TO</u>										
<u>6</u>	<u>TO</u>										
<u>7</u>	<u>TO</u>										
<u>8</u>	<u>TO</u>										
Totals			<u>9.7</u>	<u>200</u>	<u>2 hrs 40 min</u>	<u>20</u>	<u>3 hrs 10 min</u>		Contact No: <u>023 4567</u> Supervisor's Signature: <u>L. Morgan</u>		



Equipment and Clothing.

Personal equipment

19. Each member of the group should have:
 - a. Map - for short walks in normal country, maps can be shared between 2.
 - b. Compass - can be shared between 2.
 - c. Whistle.
 - d. Rucksack - can be shared between 2-4 people to ease the load.
 - e. Large polythene bag.
 - f. Personal first aid kit.
 - g. Emergency rations - a couple of chocolate bars should be sufficient.



20. In addition the leader should take:
 - a. A comprehensive first aid kit.
 - b. Sleeping bag.
21. The leader should check individual's clothing before the expedition starts. Personal clothing should be:
 - a. Boots should be comfortable, allowing for one pair of thick socks.
 - b. Breeches or trousers, but not jeans.
 - c. Several thin sweaters will give greater warmth and flexibility than one thick one.
 - d. Waterproof anorak or cagoule.
22. Intelligent use of clothing can greatly increase the comfort of a walk. Don't let your party labour uphill wearing all their clothing - have clothing stops to allow people to remove outer layers. Spare clothing, including sweaters, gloves and socks should be placed inside polythene bags and carried in the communal sack. A balaclava helmet and gloves should be taken on all expeditions when cold and windy conditions are likely to be encountered.

Boots and care of feet

23. Boots are essential for comfort, safety and efficiency. Make sure they are broken in before an expedition and that they are kept clean and well maintained by replacement of the natural oils in the leather as necessary. They should offer good ankle support, protecting the sole of the foot from sharp stones and they should be fairly rigid across the sole. Some flexibility in a forward direction makes for more comfortable walking and a bellows-type tongue helps to keep out the water. The limitations of the vibram or moulded rubber sole should be clearly understood. They are slippery on hard snow or ice, on vegetation of any kind and on wet, greasy rock.
24. It does not matter what activity is planned, the condition of your feet can make or mar any expedition. Keep them in good order and insist that your companions do the same:
 - a. Wash them regularly.

- b. Use clean, well fitting stockings or socks, a single pair of loop stitched stockings is best or two pairs of woollen ones.
- c. Toe nails should be cut straight and kept short.
- d. Regular applications of surgical spirit harden the feet.
- e. The slightest irritation should be plastered at once.

Blisters

25. Blisters are uncomfortable and a hindrance and potential danger to the whole party. At the first sign of discomfort, stop and treat the problem. Smear the sore

Fig 1-8 Blisters can spoil any activity



area with antiseptic cream and cover it with a broad plaster - try to shape the plaster to avoid making any creases. Self-adhesive 'chiropody felt' is extremely good for covering blisters. If a blister is already present, a small ring of plaster placed around it should keep the pressure off and allow the fluid inside the blister to be reabsorbed into the blood stream. In a severe case, it may be necessary to prick the blister with a sterilised needle, having first washed the feet thoroughly. Allow the fluid to escape and then cover the area with a sterile dressing. Change the dressing daily and allow every opportunity for the area to harden up in the fresh air.

Clothing

26. The weather in Britain can change so rapidly that it becomes very difficult to find the ideal clothing for any expedition. The main item of clothing for any walkers is the anorak. The anorak has 3 primary functions:

- a. To keep water out - If water is allowed to penetrate the outer layer of

clothes it is quickly absorbed by the inner layers, causing them to lose their heat insulating qualities. Body heat is then conducted to the outside through the layers of wet clothing, making the individual cold very quickly. It is therefore vital to have a fully waterproof outer shell.

Fig 1-9 *Good anoraks are important*



b. To allow water vapour to escape - Having an airtight outer shell will unfortunately stop water vapour escaping to the atmosphere. Water vapour is produced by the body as it works and if it is prevented from escaping it will condense on the inside of the anorak, wetting the inner clothing. This situation is not as bad as being wet from the outside because this moisture is already warm. Materials such as Gore-tex are said to be breathable which means that they prevent liquid water from penetrating but allow water vapour to pass through.

c. To keep heat in - A garment that is waterproof will almost certainly be windproof as well. The prevention of loss of body heat is more a function of the inner clothing, but the anorak does help by containing the circulation of

Fig 1-10 *Weather conditions can quickly deteriorate*



warm air within the garment. The inner clothing provides heat insulation by trapping air between the fibres of the material which go to make up the clothing. The amount of insulation the body needs depends on several things including outside temperature, wind and work load. It is sensible therefore to be able to adjust the insulating properties of the inner clothing. This is best done by wearing several layers of clothing which can be removed or added to meet different circumstances.

CHAPTER 2

CAMPCRAFT AND EXPEDITIONS

1. As you become more experienced in hillwalking and route planning, you will no doubt want to try more adventurous expeditions. This will probably involve camping of one sort or another - whether it be living under canvas and carrying all that you require on your back, or staying at a fixed campsite so that you can take part in other outdoor activities. This chapter is mainly about mobile camping, although most points raised can be applied to fixed sites.

Fig 2-1 More advanced expeditions will involve camping



Considerate camping

2. One of the main problems with camping is that it is potentially very damaging to the environment. Inconsiderate and incompetent campers can do an enormous amount of harm to sensitive areas of the countryside. Digging rubbish pits or drainage channels, removing turfs and lighting fires, all leave scars that may take years to repair. Those who go camping on the hills have an obligation to ensure that they do nothing which would result in change or harm to the environment.

The timetable

An early start

3. The timetable should be flexible, with some attempt at gradual progression from easy to more difficult undertakings. If the weather is severe, stay put if possible - do not move merely to stick to an armchair plan. Do not attempt too long marches. Very hot weather can also be exhausting - if necessary be prepared to set off at 05.00hrs and finish at 1200hrs.

Food and Cooking

What to eat

4. Adequate and appetizing food is a vital part of any expedition. You must always start the day with a good breakfast and finish with a hot evening meal. A hot drink for the group on arrival at the campsite is an excellent morale booster and paves the way for a good meal. There is a good range of dehydrated foods now available on the market, but choose carefully. Select those foods that have a relatively short cooking time, and which can be cooked in a single pot.

Fig 2-2 Camp cooking requires practice



How to prepare your meal

5. Before starting to prepare the meal, make sure you have everything you are likely to need within reach. Work out a cooking plan so that food that takes longer to cook is put on first. Use pans with well fitting lids. This builds up a level of steam which will help to keep the food hot when taken off the stove. With a little care and planning the various components of the meal can be timed to arrive 'on the table' cooked to perfection.

Load Packing and Carrying

What to take with you

6. It is extremely important to take only essential items of equipment. There is nothing more likely to kill enjoyment than to be struggling under an enormous pack full of extras taken along 'just in case'. Your total load should never exceed one third of your body weight with 15 kg being the absolute maximum. Beware of the effect of rain on wet gear if you are close to the weight limit.

Which rucksack

7. Rucksacks come in all shapes and sizes but all have certain basic requirements. First of all the sack should be made of waterproof material. This will not mean that water will not get in, so you should always use a polythene liner. They should feel comfortable, carry the load high and lie close to the back. Most sacks have a degree of adjustment, but remember they are made in different sizes

for different people - make sure yours fits. The straps should be well padded and easily adjusted for length. It should have a waist belt so that some of the load is transferred onto the hips.



8. The addition of pockets and separate compartments is a matter of personal taste, the main advantage being that they enable you to get some items of equipment without opening the main sack. You can also separate the stove and fuel from food, clothing etc. You should avoid having items dangling or projecting from your pack. Apart from the discomfort and uneven weight distribution they can be dangerous to your walking companions as well as yourself.

9. The framed rucksack is useful for carrying very heavy loads. It carries the load high and distributes the load evenly across shoulders, back and hips. The framed sack also allows air to ventilate the space between the pack and your back. Its only real disadvantage is that it is an awkward shape, difficult to tuck away inside a tent and cannot be used for other things eg pillow, bivy bag. Some modern sacks include removable aluminium rods, which give it the rigidity of the framed sack without the disadvantages.

Packing

Will it all fit

10. Articles needed during the journey or immediately on reaching the camp site should be on top or in side pockets, i.e. food for the day, first aid kit, tent and so on. Heavy articles should be kept as high as possible. Balance the weight and avoid sharp edges and corners against the back. The stove and fuel should be kept in a well sealed polythene bag and stored in a side pocket or well away from food. Adjust shoulder and waist straps as necessary. All clothing and sleeping bag should

be kept in polythene bags and the sack itself might benefit from a 500 gauge polythene bag liner.

Fig 2-3 Pack your rucksack with care



Tents

11. In many respects a tent performs the same function as your outer clothing. It is expected to keep out the rain, protect you from the wind and yet allow water



vapour to escape. Further more, a tent needs to be both hard wearing and light in weight. The traditional solution to the waterproofing versus condensation problem is to provide 2 layers - an outer waterproof fly sheet and a lightweight inner tent.

12. For the wet and windy conditions so common in the U.K. it is advisable to have a sewn-in ground sheet, down to earth all-round fly sheet and strong alloy 'A'



poles front and rear. Hoop and dome designs are supported from a framework of flexible fibreglass or aluminium rods. They have the advantage of providing the maximum amount of space for a given floor area, and they use the minimum number of pegs and guys.

Siting the Camp

Where to camp

13. A good site should provide shelter from the prevailing wind. The ground should be as flat as possible and relatively free from lumps, tussocks and boulders. It should be well drained and safe from potential flooding. A handy water supply is almost essential though don't pitch too near a noisy mountain stream if you want an undisturbed night's rest. Trees may provide some protection from the wind but don't pitch directly underneath them; although they offer some immediate shelter from the rain, eventually large drops form and these are much more effective in penetrating the fly sheet.

Tent Pitching

Practice pitching the tent before you go

14. Even if the weather appears to be fair, allow for the worst when pitching your tent. Put the back end into the wind and peg out the groundsheet first to ensure tent shaping. Erect the windward end first and peg out all main guys. Other guys are pegged out in line with the tent seams. Never place stones on top of guy lines as the sawing action of the wind frays them through in no time. There should be no wrinkles in the canvas and any unnatural strains should be corrected by adjusting guys. Door tabs should be tied in bows not knots.

Striking Camp

Moving on

15. As far as the tents are concerned this is largely a matter of reversing the procedure for pitching. In bad weather it is usually possible to fold up the tent first under the protection of the fly sheet. All pegs should be cleaned and all the parts stowed away in their bags. Check the site before leaving to see nothing is forgotten and no litter is left. After a few days it should be hard to tell that the site has been used. On returning to base, tents should be hung to dry out thoroughly, and examined for damage before storing. Tents stored wet for any length of time will become mildewed and eventually rotten.

Sleeping Bags

What makes a good sleeping bag

16. A sleeping bag can never provide complete insulation against loss of body heat to the ground. A separate mattress, air bed or mat is necessary to do this and at the same time provides a little extra comfort. Down is an excellent sleeping bag filler although it can be very expensive. It has one major disadvantage in that if it gets wet it loses all its insulating properties and is virtually impossible to dry out in the field.

17. It is worth buying a good quality down or polyester bag as it will last a long time with care. It should be kept dry and clean and stored unrolled.

General tips for warmth and comfort.

Useful tips for camping

18. In winter a second sleeping bag may be needed. Try to ensure that it provides a loose fit with the first. Always do something about cold, don't just lie there shivering.

Fig 2-4 Be prepared for all weather conditions



19. It is often possible to pack the underside of the groundsheet with bracken, heather or grass to improve comfort and insulation.

20. It is more comfortable to sleep head uphill if on a slope.

21. Polythene bags are useful for storing unwanted or wet clothes, personal belongings, sugar, salt, potato powder or anything else in breakable packets. They can also be used as emergency bags for travel sickness.

22. Boots should not be worn inside tents. Wet clothes should be taken off before entry if possible. If soaked to the skin, remove all clothing, put on dry underclothes, get into sleeping bag and prepare hot, sweet drinks.
23. It is not a good idea to attempt to dry wet clothing by either wearing it or by taking it into your sleeping bag. You will only end up with a wet sleeping bag as well as wet clothing. When the weather improves, improvise a clothes line or if on the move, tie wet garments to the outside of your sack.
24. Store tins, wet clothes, ropes and anything animals will not eat, under the flysheets. Pans, stoves, water carriers should be easily within reach.
25. A small sponge is useful to mop up leak spots or spilt tea, etc.

Fig 2-5 *What ever you decide to take, remember you have got to carry it*



26. Newspapers are useful in camping for:
 - a. Insulation under bedding.
 - b. For cleaning material.
 - c. To keep under supplies, cutlery or pans to prevent dirt or grease spreading.
 - d. Putting under a pull"over for body insulation.
 - e. Helping to dry boots.
 - f. Helping to start fires.

The following are some useful items: Torch (remove battery to avoid accidental switch-on in travel); compass (Silva type are the 'best buy'); whistle (a pea whistle is better than a policeman's); maps; alloy 'Sigg' bottles for fuel; tin opener; brillo pads; toilet paper; knife; spare bootlaces; first aid kit; emergency rations in a special

box; cutlery; deep plate and mug (not china); old pair of trainers (wear on bare feet if wet, avoiding wet socks); a band saw can cut firewood easily; a small size fish slice is valuable; as is an egg whisk for mixing milk powder; sewing kit; shoe kit; writing materials; radio (for weather forecasts); anti-midge cream and or spray (May to October); alarm clock (folding); camera; small binoculars.

Hygiene

Keep yourself clean

28. Water should be collected above the site and washing should be done below. It is always advisable to sterilise all water before drinking or cooking. This can be done by either boiling it for about 10 minutes or by using sterilising tablets. Finger nails should be clean and washing of hands insisted on after using lavatories or before handling food.

Take rubbish home

29. You must not dump or bury rubbish while you are out camping. If at all possible take your rubbish home with you especially if the site is accessible and likely to be used frequently. Tins should be opened at both ends, flattened, tied in a polythene bag and taken home. Glass is unnecessary when plastic containers can be used, but on no account must they be smashed. Take empties home. Polythene bags are particularly lethal to animals.

30. Toilet facilities depend on length of stay. Where at all permanent, a latrine trench is advisable. Excrement must be buried at least 20 cms below the surface and at least 60m from any open water. When filled in there should be no trace left.

Stoves

Types of stove

31. Gas - This is clean, requires no priming, but is expensive and, for half an hour before a cartridge runs out, burns at an infuriatingly low pressure.

32. Pressure stove - These require priming with solid 'Meta' fuel or meths, but give a wide variety of pressure. They are very cheap to run. Petrol stoves are not recommended for inexperienced young people.

33. Meths burners - The most popular system is the 'Trangia', which consist of an aluminium body holding a methylated spirit burner. It is light in weight, compact and very simple to operate and burns well in windy conditions.



Safety Factors

Stoves need careful handling

34. Changing Gas cartridges or filling stoves should be done in the open and away from candles or any naked light. You must practice using your stove before setting out on your expedition.
35. As with all stoves, there is considerable danger of setting the tent alight when cooking is done inside the tent. If cooking outside is not possible because of weather conditions, adequate ventilation must be ensured. In addition to burning up Oxygen, combustion produces Carbon Monoxide gas which may be highly dangerous in a sealed atmosphere.
36. Gas is heavier than air. During sleep, gas from leaking appliances could accumulate in a layer on the groundsheet (particularly if sewn in). Quite apart from the obvious danger of explosion, this layer could rise to nose level, with fatal results. Store gas stoves and cylinders outside.
37. Paraffin pressure stoves in fact burn paraffin vapour and pumping too soon will result in flooding. This causes dangerous flaring and soot is deposited which will ultimately choke the nipple. Pricking (only when needed) to clear stoves, as well as priming, should be done outside, if possible.
38. Do not overfill a stove. When doing anything to a stove, always remove pans. When stirring pans, always hold on to the handle. Scalding accidents are common.

Make sure handles are up or extended properly so that they do not hang down near the flame to become dangerously hot.

39. Patience is the most important point in stove control.

Precautions

Stay alert

40. Do not fall asleep smoking or with a candle or stove left burning. (Elementary-but it happens constantly!) Long candles should be snapped in half to make them less unstable. Even placing them up on a tin usually ensures that if they topple they land end on and so extinguish the flame. With other forms of lighting - wick or pressure lamps, etc., care must be taken to ensure adequate ventilation.

41. A small internal fire can quickly be smothered with a sleeping bag, with little damage to the bag but, if the roof or walls go up, it is vital to get out fast. Poles and, if necessary, main guys, should be collapsed to smother the fire. Any other method is ineffective as it is too slow. Exterior poles are useful for this. A stove giving real trouble should never be used inside the tent. Work stoves near the entrance -if you must have them inside at all.

42. Outdoor fires may be pleasant but great care must be taken to ensure no fire risk to tents and to forests or dry hillsides from falling hot sparks. You must also seek the land owner's permission before lighting an open fire. Turf must be removed and replaced over the dead ashes and on no account should a smouldering fire be left.

CHAPTER 3

EXPOSURE

What is exposure

1. Exposure to extreme climatic conditions could lead to problems if a person is poorly prepared or inadequately equipped. Exposure to extreme cold could result in the condition called HYPOTHERMIA whereas exposure to excessive heat could lead to HEAT STROKE/EXHAUSTION. The symptoms and action required to overcome both of these conditions will be covered in this chapter.

HYPOTHERMIA

What is Hypothermia

2. Man is a homeotherm. This means that he tries to maintain a constant body temperature whatever the temperature of his surroundings. The human body can

Fig 3-1 A homeotherm maintains a constant body temperature



be thought of as having an inner hot core made up of major organs including the heart, lungs kidneys etc., surrounded by a cooler outer shell of skin, muscles and fat. The body core is normally at a constant temperature of 37°C but the temperature of the shell can be 3° - 5°C cooler.

3. Hypothermia is the condition which arises when there is a progressive fall in body core temperature which if not stopped could lead to unconsciousness, respiratory and cardiac failure and death. Younger people are more likely to suffer from hypothermia because they have lower physical and mental reserves. This fact must be taken into account when you are planning an expedition. The climate in the UK can invite hypothermia just as much as the Arctic climate.

4. It must be stressed however, that hypothermia is not an outcome of any single factor but usually a combination of factors. Cold is normally coupled with exhaustion, tiredness, low morale, anxiety or stress. If a team member is injured it may be shock that is the factor that gives rise to the onset of hypothermia.

5. It may be the case that your expedition has run into bad weather and your first thought is to get off the hill as fast as you can. This may seem a good idea but soon exhaustion will set in and then the risk of hypothermia will increase. Another solution could be to pitch a tent, have a drink and sit it out for a while, after which the party would be rested for the walk off the hill. The weather is the biggest factor in the onset of hypothermia and windchill is a force much underestimated. The rain makes clothing wet but the addition of a cold wind means that the body gets cold much more rapidly.

Fig 3-2 *It is sometimes better to wait for the weather to improve*



6. Exhaustion is brought on by not having sufficient reserves of energy or by trying to achieve too much in one go. The best method of avoiding exhaustion is to plan the route carefully. Allow for plenty of stops for rest and energy replacement then tailor the days activities to the ability of the group, without over doing distances or timings. Dehydration is to be avoided at all costs. The normal intake of fluid is about 2.5 litres a day but when in the hills this requirement may rise to five times that amount. The need to drink regularly cannot be over stressed. Little and often is the best guide and the leader of a party should ensure the members are taking on fluids whenever possible.

7. Another factor that greatly affects people but can not be measured is MORALE. If a party's morale is high then set backs can often be laughed off. When a party's morale is low however, the smallest upset can drain the body and make it more susceptible to exhaustion.

**How to spot
Hypothermia**

Recognition and Treatment

8. The first symptoms of hypothermia may appear trivial but when more pronounced they can cause real problems. Once these symptoms are spotted the sufferer must be treated or the problem will become worse. The range of symptoms of an advanced case are;

- a. Unexpected and apparently unreasonable behaviour often accompanied by complaints of coldness and tiredness.
- b. Physical and mental lethargy, including failure to respond to or to understand questions or directions.
- c. Some slurring of speech but this is not necessarily a good indicator because the sufferer may have strong speech until shortly before collapse.
- d. Violent outbursts of unexpected energy with possible physical resistance to offers of help.
- e. Violent language and failure to appreciate something is wrong.
- f. Lack of muscular co-ordination leading to erratic movement and falling.
- g. Failure of, or abnormality in vision, difficulty in focusing. Once this occurs the case should be regarded as extremely serious.

9. Once the sufferer has been identified the treatment should begin immediately.

What to do

10. Treatment should start by getting the sufferer into some kind of shelter such as, either a tent, bothy, hut or bivouac. The body temperature needs raising but not

Fig 3-3 Practice making a bivouac



too quickly. Insulate the sufferer by removing wet clothing and replace with dry then using one or two sleeping bags isolate the sufferer from the ground. If possible place another person into the sleeping bag with the sufferer to provide body warmth. Give the sufferer some form of sugar that can easily be digested and if a stove is being carried prepare a hot drink. If breathing stops then administer artificial respiration.

Fig 3-4 The rescue party may take some time to reach you



11. A rescue party may take some time in arriving, dependent on the location, so a careful eye must be kept on the sufferer. If he regains composure do not allow any movement whatsoever - keep him warm and then evacuate with the rescue team. The sufferer may say that everything is fine but a sudden relapse is possible.

Conclusion

Prevention is better than cure

12. Exposure exists. The best way is to avoid it wherever possible.

13. Correct walking equipment and sensible waterproof clothing is essential, the onus being on the leader to check the party for the correct attire and monitor the weather. Parties should carry emergency food and possibly a tent. Ensure that a good meal is taken before commencement of the trek ahead and levels of fitness are checked throughout the journey. If problems arise know how to deal with them. Planning is the key - escape routes and adjustments made to the plan, will mean a safe expedition that can be enjoyed by all.

EFFECTS OF HEAT

Effects of Heat

14. In the climate of the UK you would not think that heat would cause a problem on the hills. You would be wrong. Serious sunburn and mild heat exhaustion can cause problems when encountered on expeditions. The major factor is WATER. We looked at an intake of 2.5 litres in the last section as a minimum requirement.

The harder you work on the hill, the more intake of fluid you need. In a hot climate this can be as much as 12 litres. Most fluid is lost from the body as sweat which cools the shell of the body to keep the temperature down. When you sweat you also lose salt from the body though under normal circumstances this would not matter too much. On long hot treks however, the loss of too much salt can start causing problems. This can be overcome by taking salt either in tablet form or in a drink. Whichever way you choose, the body needs to be kept topped up with fluids and salt.

Sunburn

Protect yourself against sunburn

15. Lying on a beach and falling asleep is not the only way to get sunburnt. A hot day on the hills can achieve the same thing. Sunlight bounces around and reaches you from all directions. Skin which is not protected against the sun can burn and blister. The best way to avoid sunburn is to protect yourself with a barrier cream or sunblock, which when applied to all exposed skin will block out ultra violet radiation without stopping the sweating process. Treatment for sunburn can be achieved by applying calamine lotion.

Fig 3-5 Always protect exposed skin with either clothes or barrier cream



16. If the climate is hot and your work load is high there is a danger that you will get prickly heat - a rash of small blisters which is extremely itchy. The best treatment is to rest out of the sun and allow the body to cool.

Heat Exhaustion

Have plenty to drink

17. If the water reserves in the body are not sufficient then you will begin to suffer from heat exhaustion. The symptoms range from thirst, fatigue, giddiness, rapid pulse, high body temperature, low urine output to delirium, coma and ultimately death. The only way to avoid heat exhaustion is to keep the body's fluid intake up.

It is also important to remember that excessive sweating can lead to salt depletion, resulting in severe muscle cramps. This situation, while potentially very serious, can be avoided by regular salt intake.

Heat Stroke

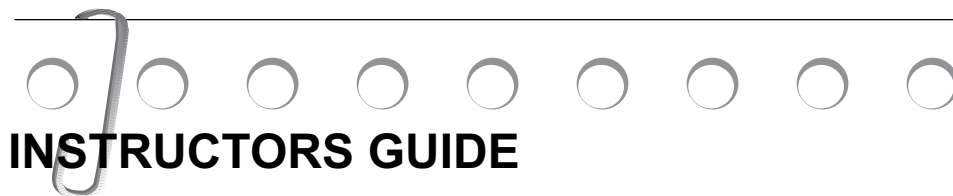
Try to keep cool

18. This is the most serious of the heat disorders. Heat stroke occurs when the body's temperature regulating system fails. The symptoms are: high body temperature and an absence of sweating (the skin being dry to touch). There will be a lack of co-ordination and the sufferer will end up in a coma and then die if not treated immediately. Initial treatment would be to sponge the sufferer down with water and cover the body with a damp cloth. Alternatively, if it is possible, immerse the sufferer in cold water.

Conclusion

19. To avoid these types of problems, keep your fluid intake up, do not over work yourself. Take adequate salt in your diet and supplement if necessary.

CHAPTER 1



INSTRUCTORS GUIDE

INITIAL EXPEDITION TRAINING**Page 31.4.1-1 Para 1**Adventure Training - General Policy - (ACP 17 Chapter 1)

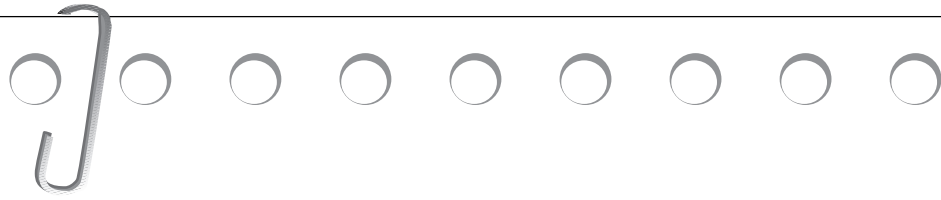
1. The purpose of adventure training in the Air Training Corps is to encourage and foster the development of character, leadership, initiative and physical qualities among cadets.
2. Whilst it is not possible to list the great variety of exercises carried out by the Air Training Corps under the general heading of adventure training, such activities include:
 - a. Expeditions on foot similar to those required to qualify at various stages of the Duke of Edinburgh's Award.
 - b. Escape and evasion exercises.
 - c. Initiative exercises such as:

Bridging of streams, ravines etc - scaling of obstacles and assault courses.
 - d. Canoeing, Sailing, Rock Climbing, Caving, Skiing, Snorkelling etc.
 - e. Endurance tests such as the Pennine Way, Ten Tors etc.
3. Adventure training is normally to be carried out in the United Kingdom (except for overseas squadrons). The prior approval of HQ Air Cadets is required for training overseas (UK squadrons) or outside national boundaries (overseas squadrons) in accordance with ACP 20A, ACT1 No 1D. Instructions for the Duke of Edinburgh's Award Scheme are given in ACP20A, ACT1 No 74.

Page 31.4.1-1 Para 2HILL AND FELL WALKING

1. Normal Country. Supervision of expeditions undertaken in normal country may be carried out by an adult experienced in the normal techniques of walking, navigation and camping.
2. Wild Country. For expeditions in wild country, it is suggested that the standards laid down by the British Mountaineering Council (BMC) should be regarded as the minimum required of supervisors. These are:
 - a. They should have acquired the Mountain Rescue Committee's Handbook "Mountain and Cave Rescue", and the BMC booklet "Safety on Mountains", and should have read and understood both of them.
 - b. They should have spent at least 3 weeks on mountains previously. Preferably this period should have been spread over at least a year, with one week under some form of instruction, eg from experienced friends, a mountain guide, on a Sports Council or climbing school course (or successfully attended the RAFVR(T) Mountain Activities Course. (See ACP 20A, Instruction No 96)).
 - c. They should have had some experience of the conditions likely to be encountered, especially cold, mist, rain and high winds.
 - d. They should be competent in the use of a compass and in map reading, and have experience of navigation in difficult conditions such as rain or mist.
 - e. They should have done some easy rock climbing or difficult scrambling, in case they

CHAPTER 1

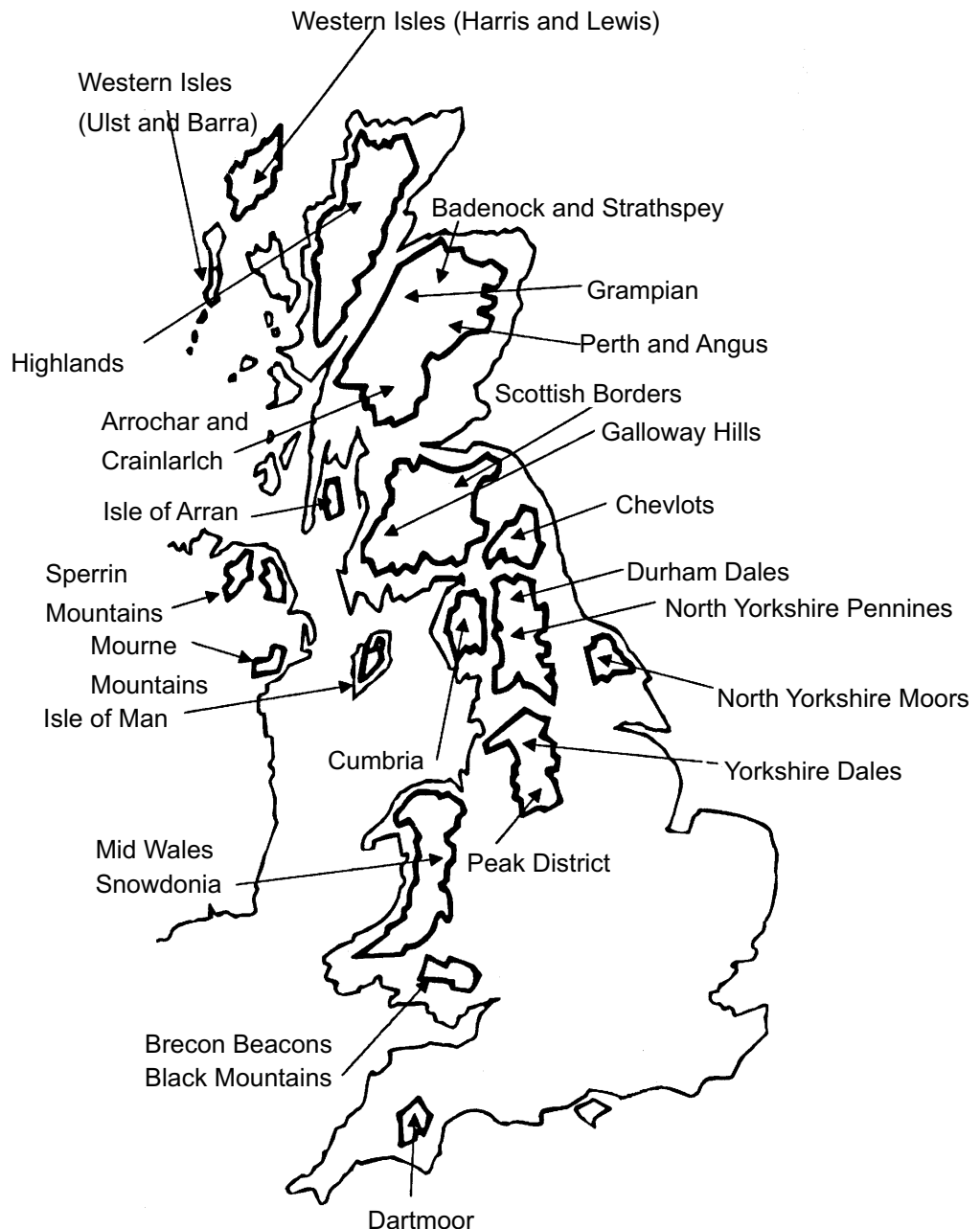


become involved in elementary rescue work.

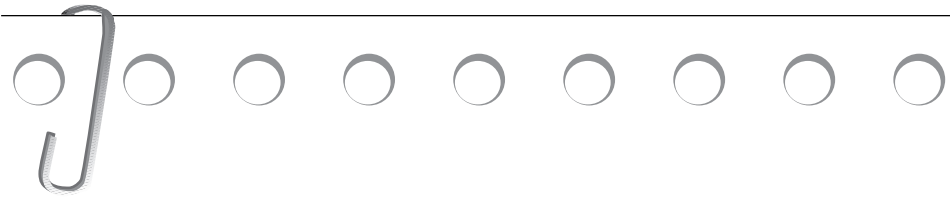
f. They should have a knowledge of first aid, treatment of hypothermia and elementary survival techniques in case of emergency.

3. This is the minimum experience required, and could be multiplied many times with advantage to the leaders concerned. It does not fully qualify them for their task. It is rather the minimum, without which they should not venture at all. Possession of a Mountain Leader Training Board (MLTB) Mountainwalking Leaders Summer Assessment (full pass) gives a good indication of a leader's technical competence to conduct parties into mountainous or remote country.

Wild Country Areas in the UK



CHAPTER 1



Page 31.4.1-2 Para 4

USE OF PRIVATE LAND OR WATER

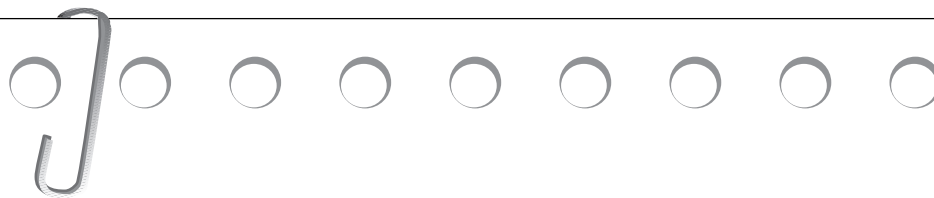
Adventure training is not to take place on private land or water unless permission of the owners/occupiers and/or Army District headquarters has first been obtained. Private land in this context is defined as all land including recognised military training areas owned or leased by the Ministry of Defence. It includes National Trust, Forestry Commission, common and unfenced land, and land in National Parks, as well as land owned by private individuals and farmers. Private land or water is made available only with the cooperation and consent of the owners, and it is therefore most important to foster and retain good relations and to avoid damage and inconsiderate behaviour.

Since Army units need to use private land and water for training more frequently than the other Services, Army District Headquarters will coordinate all applications for the use of private land or water that arise in all 3 Services, including cadet organisations. Applications should be made through Wing Headquarters to the appropriate Army District Headquarters in which the exercise area is situated, at least 2 months before the date of the proposed exercise. The application should define the general area to be used, the type of training, the period of use, the number of personnel and types of vehicles to be used. The addresses of the Army District Headquarters can be found in ACP17 Chapter 1 Annex D from which copies of the rules and orders governing training in each area can be obtained. It is the responsibility of ATC wing Headquarters to ensure that they hold up-to-date copies of these publications.

STANDING INSTRUCTIONS FOR MILITARY UNITS TRAINING ON PRIVATE LAND

1. ALL gates are to be properly closed and fastened after use.
2. Cadets on training are on no account to climb over fences and hedges, and every endeavour is to be made to avoid damage to private property.
3. Arable and hay crops are out of bounds but, in the event of permission being given to traverse such land, boundary fences must always be followed to obviate damage to growing crops.
4. Farmhouses and buildings are out of bounds.
5. Farm implements and machinery must never be handled or moved without the owner's consent.
6. Where slit trenches and latrines are authorised to be dug, they must be properly filled in and turf relaid when the sites are finally vacated.
7. Timber must not be cut or damaged, and no nails etc are to be driven into growing trees. Foliage must not be used for camouflage etc.
8. Every possible precaution must be taken against fire and in no circumstances are fires to be lit in the vicinity of timber.
9. All defence works, eg barbed wire, must be moved from the land on termination of training.
10. Sites are to be completely cleared of rubbish and litter, including tin-cans, broken glass, razor blades etc which, in addition to contravening the Litter Act 1958, constitute a danger to livestock.
11. Care is to be taken at all times to reduce noise and interference to an absolute minimum, particularly in the lambing season, and after winter when ewes are in a weak condition.

CHAPTER 1



12. All special conditions imposed by private owners and tenants of the land are to be strictly observed.

13. Any damage occasioned to private property, including livestock, must be reported to the Defence Land Agent, in the area concerned. At the same time, the owner of the property is to be informed of the damage and of the action taken.

Page 31.4.1-7 Para 19

SAFETY PRECAUTIONS AND EQUIPMENT

INTRODUCTION

1. All ATC personnel participating in adventure training are to comply with the instructions on safety precautions and equipment detailed in ACP 17 Chapter 3, which are intended to help standardise safety principles throughout the Corps. Further information required on any aspect of safety or equipment can be obtained from HQ Air Cadets (Attn PEDO).

GENERAL SAFETY PRECAUTIONS

2. The following general safety precautions are to be read in conjunction with those relating to a specific type of activity included as Annexes to ACP 17 Chapter 3.

COMMAND

3. It cannot be too strongly emphasised that it is the direct responsibility of Squadron Commanders to select as adult supervisor for any particular activity, an individual whose personal qualities, training and experience meet the necessary requirements. Such supervisors are to be experienced in the activity they organise: and are to be responsible for all training and safety decisions. (ACP 17 Chapter 1, paras 4 and 6 refer).

EQUIPMENT

4. The equipment required for any particular activity is to be listed: and each item, including personal clothing, is to be checked for serviceability before the activity starts. Equipment should be sub-divided for checking into 3 groups:

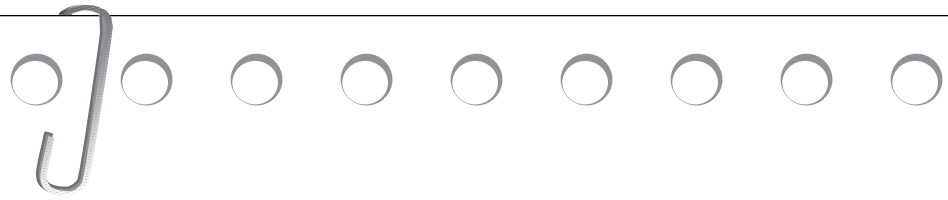
- a. Activity equipment, ie: specialist equipment such as ropes, canoes, caving helmets, life-jackets etc.
- b. Personal equipment; anoraks, boots, etc.
- c. Emergency equipment. Depending on the type of activity and the length of time to be spent travelling each day, certain items are essential for the safety of the group. Supervisors are to give careful consideration to the equipment that would be required if the group became endangered by injury or weather. Each main party is to carry a First Aid pack, to be augmented by a personal First Aid Kit carried by each member.

Page 31.4.1-9 Para 23

GENERAL ADMINISTRATION

1. Supervisors of cadet expeditions must be fully conversant with the contents of ACP17 Chapter 4, dealing the administration and finance.

CHAPTER 1



2. Adventure training is an official activity and therefore attracts assistance from public funds. It is vital that administration of the scheme should be meticulous, particularly since those engaged on hazardous training are entitled to expect that their interests are being adequately protected. A secondary reason is that only by the submission of accurate and meaningful returns can higher authority determine the level of support from public funds needed in future years.
3. To substantiate any award following injury or death, it is most important that all adventure training receives prior approval at the correct administrative level. Therefore squadrons are to be discouraged from pursuing such activities on an unofficial basis. In the event of injury or death resulting from participation in an authorised adventure training activity, members of the Corps will be considered for awards under the terms of AP 1919, Chap 12.
4. To exercise initiative and resource, it is appreciated that commanding officers will wish to see that projects contain some challenging features. Nevertheless, it is incumbent upon those concerned with the supervision of adventure training that they ensure all aspects of safety are properly covered. These are to be amplified in Squadron/Wing training orders, using appropriate authoritative publications as sources of information.
5. Adventure Training Officers are to maintain a detailed record of all adventure training activities carried out by personnel from their squadrons, including those on training sponsored by other organisations (eg RAF Sailing Association, Joint Services Adventure Training Centres etc).

CHAPTER 2



INSTRUCTORS GUIDE

CAMPCRAFT AND EXPEDITIONS

Page 31.4.2-1 Para 1

AIR CADET ADVENTURE TRAINING CENTRES

INTRODUCTION

1. The Air Cadet Adventure Training Centres at Windermere and Llanbedr provide facilities for cadets to participate in adventure training in countryside more demanding than that normally to be found in their local areas. The Centres, however, are bases from which training is undertaken and are not intended to provide the facilities of a holiday hostel. The Centres are open each year from March to November.

DUKE OF EDINBURGH'S AWARD SCHEME – EXPEDITIONS

2. Although not directly associated with the Duke of Edinburgh's Award Scheme, the Centres can provide the type of training appropriate to Silver and Gold awards. They also provide the opportunity for cadets to qualify in the relevant phases of Silver and Gold award expeditions.

LOCATION OF CENTRES

3. The Windermere Centre is located within a mile of Windermere BR Station. Its postal address is:

The Air Cadet Adventure Training Centre

Park Road

Windermere

Cumbria

LA23 2BJ

Tel: Windermere (STD 05394) 43660 (Visitors)

(STD 05394) 44946 (Office)

4. The Llanbedr Centre is located opposite the main gate to the Royal Aircraft Establishment Llanbedr and is within half a mile of Llanbedr BR Station on the Shrewsbury to Pwllheli line on the Welsh coast. Its postal address is:

The Air Cadet Adventure Training Centre

RAE Llanbedr

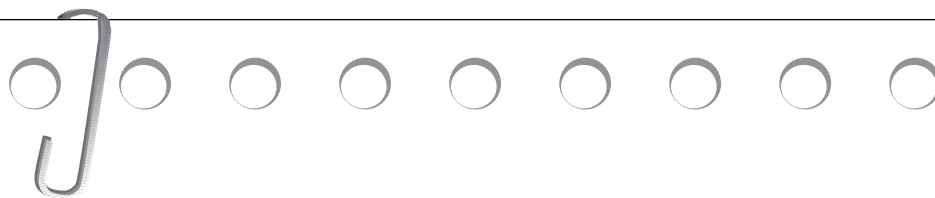
Gwynedd

LL45 2PX

Tel: Llanbedr (STD 034123) 594 (Visitors)

(STD 034123) 554 (Office)

CHAPTER 2



ELIGIBILITY FOR ATTENDANCE

5. Cadets. To be eligible for attendance, an ATC cadet must be 14 years of age or over and have taken part in progressive and comprehensive training commensurate with the environment and terrain of the Lake District and Snowdonia.
6. Adults. All ATC officers, warrant officers, honorary chaplains and civilian instructors who have had experience of leadership in adventure or expedition training are eligible to attend. There is no age limit for adults, however, since they will be responsible for controlling adventurous activities, they are to be able to undertake two or three days fell-walking and camping under adverse weather conditions and other strenuous activities.

CENTRE INTAKE ALLOCATION

7. Each Centre intake will normally consist of 6 adult ATC personnel and 30 ATC cadets. All Wings will be invited to apply for places and allocations will be made by HQ Air Cadets. Separately contained facilities are available for 2 female staff and 10 girl cadets included in each Centre intake.
8. On 1 November each year HQ Air Cadets will call for wing applications for places. In order to economise on travel costs, wings should apply for a complete Centre intake, rather than Squadrons submitting for separate dates, and also use the Centre nearest their location. Wherever possible, applicants should give alternative dates in order of priority. Where courses are over-subscribed allocations will be made by ballot. Places on under-subscribed courses will be offered to Wings on a first come, first served principle.

REGIONAL/WING ADVENTURE TRAINING CENTRES

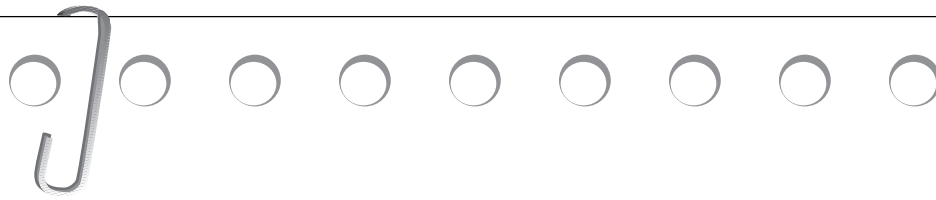
GENERAL

1. In addition to the Corps Adventure Training Centres at Llanbedr/Windermere, which are administered by HQ Air Cadets (PEdO) there are a number of Regional/wing Adventure Training Centres. Regional/wing Headquarters controlling these Centres have indicated their willingness to allow ATC groups from anywhere in the country to use them provided they are not being used by their own Wings/Squadrons. Details of these centres are published periodically in Routine orders and "Air Cadet": and applications to use them should be sent direct to the Regional/Wing headquarters concerned.
2. Adult supervisors and cadet groups who are given permission to use any of these Centres must comply with the regulations of ACP 17, and with all orders and instructions issued by the controlling Regional/Wing headquarters.

BETHESDA

3. The Bethesda Centre is located in Snowdonia and provides facilities for cadets to participate in expedition type activities over countryside more demanding than that normally found in their local areas. Command and control is exercised by ACRHQ (Wales) through The Regional Adventure Training officer. Administrative and organisational control is delegated to HQ No 2 Welsh Wing.

CHAPTER 2

CROWBOROUGH

4. The Crowborough Centre is a partially staffed permanent Army Camp situated one mile from the small residential town of Crowborough, Sussex; and, although the surrounding countryside is not as demanding as the Lake District or North Wales, the Centre provides facilities for cadets to perform a variety of outdoor activities of a progressive nature, leading up to major exercises in hazardous country. The Centre is controlled by ACRHQ (L & SE), to whom application for reservations is to be made.

THE JOINT SCHOOL FOR ADVENTUROUS TRAINING INSTRUCTORS, LLANRWSTGENERAL

1. All courses at the Joint School for Adventurous Training Instructors (JSATI) provide training for instructors and leaders of outdoor activities, ranging from a general introduction to the basic skills in a wide range of activities to specialist training for instructors and leaders in all the activities. Information about the JSATI can be found in ACP 17 at Annex A to Chapter 6.
2. The JSATI is recognised by the Mountain-Walking Leader Training Board (MLTB) as an agency for the assessment of candidates for the Mountain-walking Leader Training Scheme (MLTS) (Summer). Details of the MLTS, and the syllabus requirements, are given in ACP 17 Chapter 7.
3. Since all courses at the Centre are essentially practical in nature and therefore physically demanding, all officers, warrant officers and civilian instructors selected to attend at JSATI are expected to arrive well prepared, in good physical condition, and sufficiently fit to undergo strenuous activity. The majority of courses include one or two nights living in wild country under canvas.
4. In addition to being physically fit, personnel selected should be strongly motivated towards achieving instructional qualifications whenever possible, and should possess a genuine interest in group leadership.

Page 31.4.2-5 Para 13

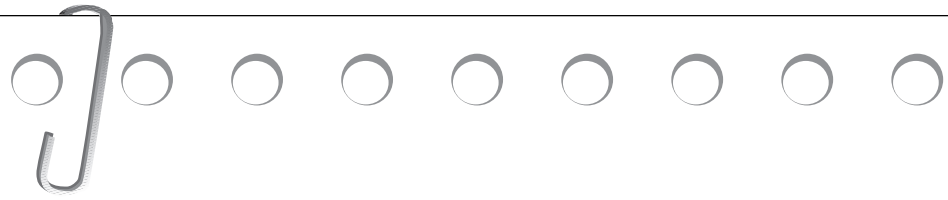
CONSERVATION

1. The mountains are a sensitive environment, and under constant pressure from a whole host of activities and interests. Hillwalking and Mountaineering contribute to that pressure and both can be damaging to the physical environment. They can cause disruption to the interests of those who own and manage the land, and can mar the enjoyment of those who follow. There is a very real danger that the more popular areas will become so degraded that either the potential for enjoyment will be severely reduced, or owners or authorities will seek to impose controls to reduce the impacts. If such situations are to be avoided and freedoms maintained, there is a real need for people to take responsibility for and respect the environment.
2. The following notes offer some advice on ways to minimise the impact associated with mountaineering without any major limitation or curtailment of activity.

PARKING

3. Mountaineers frequently approach the hills by private transport and there is a temptation to drive, as close as possible to one's chosen objective. Car parking spaces are however, not always conveniently available. Farmyards, lanes and gateways are often in use, and bulky farm

CHAPTER 2



machinery needs considerable space for manoeuvring. For a farmer, an inconsiderately parked vehicle can cause great inconvenience and annoyance.

4. Vehicles should not be driven away from public roads on to bridleways, private roads or open country. (It is an offence to drive more than 15 yards from a highway without the landowner's permission.) You should always park with forethought and consideration.

PATHS AND EROSION

5. The most popular paths are suffering serious erosion. Heavy soled boots easily trample and break up the surface vegetation which dies to reveal a generally unstable soil. Heavy rainfall on steep slopes will wash the material away resulting in the formation of gullies. The eroded section becomes unpleasant for walking on and small detours will lead to the path widening. Eroded sections on some popular hill paths have measured as much as 50 metres in width.

6. Expensive reinstatement schemes are underway in some areas but financial and practical constraints limit such work to the lower paths. When walking on the hills you should always:

- a. Tread Carefully, and where possible walk on boulders or stony ground.
- b. Resist the temptation to cut corners on zig-zag descents.
- c. Avoid running screens.
- d. Co-operate with diversions while repair work is in progress.

WALLS, FENCES, GATES AND STILES

7. Dry stone walls and fences are extremely important in containing animals. They can be easily damaged by people climbing over them and are extremely time-consuming and expensive to repair. As a consequence, broken walls are often quickly and cheaply secured by unattractive fencing materials rather than rebuilding.

8. You should always use gates or stiles, even if it entails a short diversion and make sure that you close and fasten all gates.

9. If it is absolutely necessary to climb a wall, then do so carefully, and replace any dislodged stones.

10. Always keep to footpaths across enclosed land.

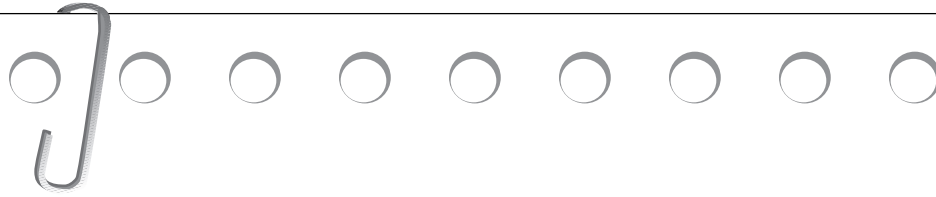
LITTER

11. The problem of litter is not unique to the hills, but there are many examples of severe litter problems that can only be attributed to hillwalkers or climbers. Vast quantities of litter have already been removed from some of the worst spots. Litter looks unpleasant, it can be harmful to stock, and attracts scavenging animals and birds such as rats, sea gulls and crows. These animals then prey on and displace the natural species of the area.

12. A considerate walker will aim to minimise rubbish, particularly on overnight trips. Carry all litter down the hill - it is useful to carry a plastic bag for this. Never bury rubbish or throw it behind rocks as animals will dig it up.

13. Don't bury it in the snow because it soon reappears in spring.

CHAPTER 2

ACCIDENTAL FIRES

14. Accidentally started fires can cause extensive, expensive and long-term damage to areas of moorland or woodland. Concern over fire is a significant reason for landowners not wishing to allow public access to areas of open country. It can take between 10 and 20 years for a burned heather moorland area to recolonise and more than 30 years for the full establishment of the original level of growth. Common causes of fires are:

- a. Discarded cigarette ends and matches.
- b. Camp fires and stoves.
- c. Bottles and broken glass.

Take special care not to risk starting a fire, particularly during dry periods. Never light a fire without the landowner's permission.

CAIRNS

15. The proliferation of cairns on many paths is an unsightly 'urbanisation' of the hills, and as a form of signposting, they diminish the wilderness quality. Those venturing into the hills should be competent at navigating by map and compass and not rely too heavily on cairns for directions. Cairns can give a false sense of security. Don't build or enlarge cairns.

PLANTS AND ANIMALS

16. Wild animals and birds can be disturbed by human presence. During the nesting season birds may desert a nest if disturbed, or may be frightened away for so long that the eggs will chill or the chicks die. Animals can be worried by dogs not kept under the strictest control. Sheep are particularly at risk during the lambing season and nothing should be done to disturb or frighten ewes in lamb. Dogs will also scent out ground nesting or sitting birds.

17. All wild plants are protected by law and it is illegal for anyone to uproot any wild plant without the permission of the landowner.

18. If you require a record of the wild plant, then take a photograph.

CAMPING

19. Camping, bivouacking or staying in a primitive shelter can be a most rewarding experience. The use of additional equipment for shelter and cooking can however have a great impact on the environment unless great care is taken.

20. Without attention to detail, an idyllic campsite in the hills can easily degenerate into an unsightly and unhygienic mess.

21. To avoid vegetation damage, tents should not be pitched on the same spot for more than 2 or 3 days. On existing sites try to avoid pitch marks to allow the vegetation time to recover.

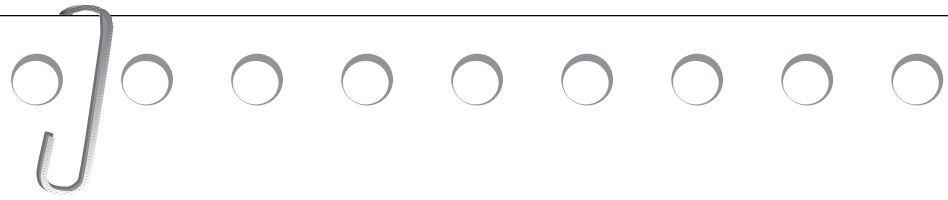
22. Don't dig drainage ditches around tents. If the site is too wet, look for somewhere else.

23. If boulders are used to hold down pegs or valances, replace them where they were found.

BIVOUACS

24. If it is necessary to build a shelter wall, take it down in the morning.

CHAPTER 2



BOTHIES

25. These rudimentary shelters provide excellent accommodation in remote areas. Most are not regularly maintained and it is the responsibility of visitors to leave a bothy as they would wish to find it.

26. Leave the bothy clean, and secure doors to keep out sheep and deer. Avoid going to bothies with a party large enough to fill it, others may want to use it also.

FIRES

27. Fires can be very enjoyable, but they can also cause local damage and so need to be monitored very closely. In the first instance you must seek the landowner's permission before lighting a fire. Although a good fuel source, dead wood is an important part of natural cycles, so keep fires small to conserve it. Never cut live wood for fires.

28. Select a non-inflammable, non-scarring site such as a dry stream bed. Completely extinguish a fire before leaving the site. Tidy up by dis'mantling and replacing the rocks in natural locations.

POLLUTION

29. A certain amount of personal and equipment washing is necessary, so care should be taken to minimise water pollution.

30. All washing should be done well away from any water source and foul water must be allowed to drain into an absorbent soil - it should not be returned to the water source.

31. Toilet waste should be buried in a hole at least 15 cm (6 in) deep, well away from a water source, and the soil and turf replaced and trodden in.

CHAPTER 3

EXPOSURE

Page 31.4.3-1 Para 1

NOTES ON EXPOSURE

1. Definition. "Exposure" is not a strict medical term: in general usage, however, it describes the serious effects which result from exposure to climatic hazards. In general, it is limited to the effects of cold environments: phrases frequently used include 'suffering from exposure', 'death of exposure', 'risk of exposure'. The essential feature of conditions described in this way is a reduction in the heat content of the body, which becomes serious when deep body temperature begins to fall. A definition of exposure to meet the current use of the term is "Severe chilling of the body surface leading to a progressive fall of body temperature, with the risk of death from hypothermia.

2. The Dangers of Exposure.

a. There appears to be an increasing number of cases of exposure amongst people engaged in outdoor activities in the mountains or at sea, probably due both to the increasing numbers who are at risk and to improved knowledge leading to recognition of its symptoms. Ignorance on the part of helpers and rescuers has often led to dangerously incorrect treatment being given to those suffering from exposure. The main purpose of these notes is to increase the knowledge and understanding of the signs, symptoms and correct treatment of exposure among those who may be called upon to deal with people suffering from this condition. In trying to set out the basic facts it is hoped they may assist in a greater understanding of a condition which has been the cause of far too many unnecessary deaths. But it is emphasised that the subject remains complex; and that, in these notes, only a brief and superficial answer is given: and that continuing and detailed research is needed.

b. It is the combination of fatigue, cold, anxiety or mental stress which is specially dangerous. The elements in this combination will vary greatly with the individual, as will the individual's susceptibility to some or all of these factors. In considering exposure to cold, it is well to bear in mind what has been written by Mr D G Duff FRCS, himself a mountaineer and rescuer of long experience. "It is, I consider, the additional factor of physical exhaustion over and above cold which kills quickly. Death has overtaken whole parties who, thinking they must keep moving at all costs, have 'bashed on, instead of resting in some shelter before exhaustion supervened. The essential is always to preserve a sufficient reserve of energy in severe conditions of cold and high winds".

c. A rider may be added that, with an injured and immobilised climber in the mountains, whilst cold may kill a person who is not physically exhausted, death will not normally occur so rapidly: and it should be possible to put in hand rescue operations before a casualty dies of cold. In general, however, it is emphasised that the risk of death from exposure is a real and often unrecognised danger among those, and particularly by the young, who undertake mountain expeditions in bad weather conditions.

3. Signs and Symptoms of Exposure. It is not always easy to decide early enough that you have a mild case of exposure on your hands. It is very important to do so, since it may be possible to avoid a crisis if, at the onset, you are aware of the symptoms and can begin to treat them. The following are among the most usual symptoms:

a. Unexpected and apparently unreasonable behaviour, often accompanied by complaints of coldness and tiredness.

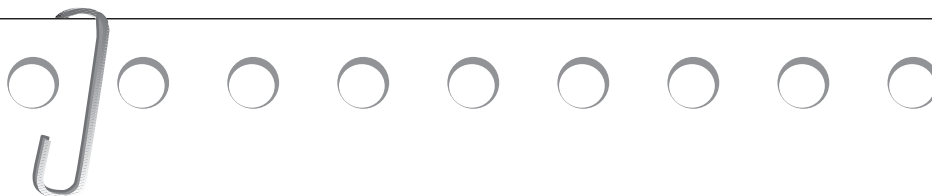
b. Physical and mental lethargy, including failure to respond to or to understand questions and directions.

CHAPTER 3



- c. Failure of, or abnormality of vision. It should be noted that some failure of vision is a very usual symptom: and, when this does occur, the conditions should be regarded with extreme seriousness.
 - d. Some slurring of speech. There is not necessarily early failure of speech, and the victim may speak quite strongly until shortly before collapse.
 - e. Sudden shivering fits.
 - f. Violent outbursts of unexpected energy, possible physical resistance to succour, and the use of violent language.
 - g. Falling. Note: It should be stressed that not all of these symptoms may be noticed: and not necessarily in this order given above. Other symptoms which may sometimes be observed are muscle cramp: extreme ashen pallor: light-headedness: and, occasionally, a fainting fit.
4. General Considerations.
- a. Whilst under normal conditions, the inner 'core' (Trunk and brain) of the body remains constant at 37°C (98.4°F), the temperature of the outer shell is always lower. This outer shell consists of the skin, underlying fat and muscle: and extremities (arms and legs, ears, nose). These comprise almost half of the body. It is VITAL to preserve the deep core temperature. A shift in this leads directly to MENTAL DETERIORATION; the loss of MUSCULAR CO-ORDINATION: and, eventually, to UNCONSCIOUSNESS, HEART AND RESPIRATORY FAILURE AND DEATH.
 - b. The body itself acts to maintain core circulation and temperature by restricting the flow to the exposed periphery so that core blood is not cooled at the surface.
 - c. IN ANY TREATMENT, THEREFORE, THE IMPORTANCE MUST BE REALISED OF NOT INCREASING PERIPHERAL CIRCULATION UNLESS THERE IS MINIMAL LOSS OF HEAT AT THE SKIN SURFACE. FURTHER HEAT LOSS FROM THE CORE MUST BE AVOIDED AT ALL COSTS. SUDDEN SURFACE WARMING THEREFORE IS WRONG.
 - d. when the symptoms of exposure are clearly established, any further exertion, such as forcing the victim to go on walking (even downhill) must be avoided. The party must stop and proceed to treatment. IT IS IMPOSSIBLE TO OVER STRESS THE IMPORTANCE OF THIS.
5. Methods of Treatment.
- a. Immediate Treatment in the Field. As already indicated, the risk of precipitating a sudden surge of circulation to the surface, such as may be produced by hot water bottles, rubbing or the intake of alcohol, SHOULD BE AVOIDED.
 - b. Experts differ on the degree to which individuals or peoples can become genuinely acclimatised to cold. For those undertaking mountain courses a programme of habitation to cold conditions can be very useful. Many of the students attending these courses will never have been exposed to similar conditions before, and many of them too lead sheltered and 'centrally-heated' lives. So even if the degree of physiological acclimatisation which they may achieve during the course may be very small, habitation to conditions of cold will lessen the degree of fear and apprehension which some may feel when they meet them on a big mountain for the first time. Learning to live normally comfortably in the cold should be the aim.

CHAPTER 3



c. Instructors should see to it that, in conditions of cold and bad weather students put on their waterproof anoraks, and their windproof over-trousers. It is perhaps worth adding that they should also ensure that students do not wear all the extra clothing when they are at base. It is almost as important for instructors to make certain that students have with them and do actually eat a sufficient quantity of carefully balanced foodstuffs during the whole course of an expedition. Bad conditions on the mountain should not cause the party to omit eating small quantities of energy giving food during the mountain day.

d. It is obvious that it is nevertheless important to ensure that the loads carried by individual students particularly on long expeditions, are not too heavy for them. Carrying too heavy a load is a potent cause of early exhaustion. As a rough guide, a load even when wet, should never exceed one-third of his personal weight. As a rougher guide still, loads in excess of 30lbs are to be avoided.

e. We emphasise finally that the detection of incipient exposure is not easy, and that the need to detect its earliest stages throws a heavy responsibility on instructors. In this, as in so much of the rest of their work, they need to possess an unusual combination of training skill and alert awareness of what is happening to their charges.

Page 31.4.3-4 Para 14

NOTES ON THE EFFECTS OF HEAT

INTRODUCTION

1. Heat generated in the body by strenuous exercise has to be dissipated to keep the body temperature normal. The body does this by allowing a lot of blood to come to the surface into the skin, where the heat is lost by the evaporation of sweat. To avoid extreme dehydration, the water must be replaced by drinking. Failure to do so means the eventual breakdown of the cooling process, resulting in a rapid rise of body temperature. This can quickly reach dangerous proportions, and can be fatal unless remedial measures are taken. In hot sunshine, the body absorbs more heat by radiation from the sun and surrounding land. Sunburn adds to the problem.

HEAT EXHAUSTION

2. Heat exhaustion is due mainly to dehydration and leads to a shocked condition, delirium and coma. The patient should be placed out of the sunshine in a shaded place. Give him lots of cool water to drink.

HEAT STROKE

3. Heat stroke is caused by a breakdown of the body temperature control system. It is usually preceded by heat exhaustion: and is evident by high body temperature, hot dry skin, little sweating and lack of coordination by the patient. The onset of convulsions, coma and death will follow unless effective treatment is immediate. The patient must be cooled down rapidly by loosening clothes to fresh air; fanning; applying cold, wet cloths: and making him rest and take cool drinks.

CONCLUSION

4. A sensible attitude must be adopted to combat the effects of heat. Avoid strenuous exercise in the heat of the day, have frequent rest periods, wear loose, light clothing as a protection against direct heat absorption particularly wear something on the head and protect the back of the neck from the sun, drink as much water as you can. In the winter sunshine with snow on the ground protection from glare is essential by using sunglasses and reputable 'glacier creams' on the exposed skin.

