



air cadet publication
ACP 31

general service training
section 4 - initial expedition training



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Acknowledgement

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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

Issued May 2007

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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, moor land, 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 10 - 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. **Escape Routes.** When planning a route for any expedition it is important that you have alternative plans if things go wrong, 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. **How to get Help.** 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. In an

emergency call Rescue Services via the Police (999). Although mobile telephones may be useful, do not rely on them as network coverage is often poor particularly in valleys.

Walking Skills.

Naismith's rule

7. **Naismith's Rule.** 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

Fig 1-3 Measure Distance in Time



will take practice and experience on your part to judge the pace of your walking. It is also necessary to compensate for the height climbed during your journey as this will slow you down. As a guide, allow 15 minutes per kilometre covered plus 1 minute for every 10 metres climbed:

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

The group acts as a single unit

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



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 not left to struggle on their own to become exhausted and depressed. Keep together

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



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 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.

Walking rhythm

9. **Walking Rhythm.** 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.

Set your feet carefully

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.

11. The feet should be placed down flat with a deliberate step, resting the heels

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



on any available projections such as stones or tufts of grass. Where the slope is steep, zig-zagging will assist the walker. Good rhythm and setting the feet is the sign of an experienced hill walker.

12. When descending, over striding 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 it is vital to take plenty of water to drink. The hotter it is and the harder you work, the more water you will need. 'Little and often' once again is 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.

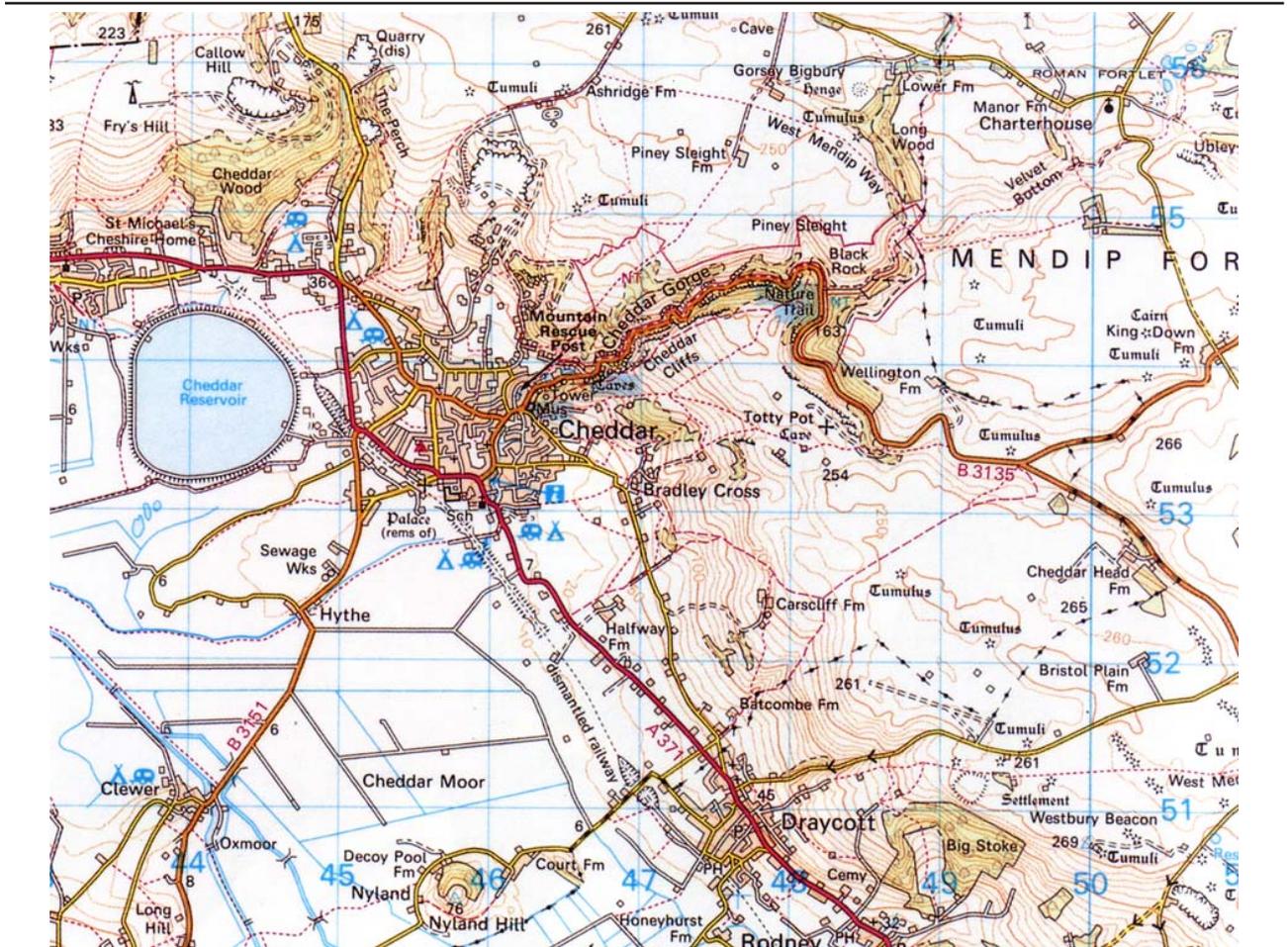
Route Cards.

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, INFORM THE PERSON HOLDING THE ROUTE CARD.

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	Day	GIANAMI, JACK, IAN, HELEN, DWARZA							HQAC	
Leg	PLACE AND GRID REFERENCE	Direction or Bearing	Distance in km	Height climbed in metres	Time for leg	Time for stages	Total time for leg	ETA	Start time	ADDRESS
	START YH 455 534								0700	RAF NEWTON
									Route details	Escape to:
1	TO Entrance of caves 467 538	NE	1.2	50	20	-	20	0720	Along road to Museum Follow path to Caves	Return along path
2	TO Black Rock 454 546	NE	1.5	150	30	10	40	1000	Cross path following Gorge	Return along path
3	TO Ashridge FM 467 554	NW	3	60	50	10	60	1100	Follow path contouring the hill. Climb NW	Return to road B395
4	TO Cheddar YH 455 534	S	4	-	60	10	70	1200	Follow path to Mouth of outcrop - descend the wood	Return via road South of outcrop
5	TO									
6	TO									
7	TO									
8	TO									
Totals			9.7	260	2 hrs 40 min	30	3 hrs 10 min		Contact No: 0123 4567 Supervisor's Signature: <i>S. Morgan</i>	



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.
 - e. Large heavy-duty polythene bag, large enough to get inside.
 - f. Personal first aid kit.
 - g. Emergency rations - a couple of chocolate bars should be sufficient.



h. Clothing - this may range from a spare jumper and socks for a day journey, to complete change of clothing for a acamping expedition.

20. In addition the leader should take:

a. A comprehensive first aid kit.

b. Sleeping bag.

c. Mobile telephone

d. If tents are not carried, a group shelter appropriate to size of party.

e. A strobe light to aid rescue at night.

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. Wool or fleece-content trousers, or mountain walking pants with long-johns in colder conditions.

c. Several thin sweaters will give greater warmth and flexibility than one thick one.

d. Waterproof anorak/jacket and trousers.

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 should be place inside polythene bags. A wool or fleece hat 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 and care of feet.** 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. 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.

Fig 1-8 Blisters can spoil any activity



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. The slightest irritation should be plastered at once.

Blisters

25. **Blisters.** Blisters are uncomfortable and a hindrance and potential danger to the whole party. At the first sign of discomfort, stop and treat the problem. Cover the sore area with a broad plaster - try to shape the plaster to avoid making any creases. Self-adhesive 'chiropridy 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:

Fig 1-9 Good anoraks are important



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.

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

Fig 1-10 Weather conditions can quickly deteriorate



is already warm. Materials such as Gore-tex are breathable which means that they prevent liquid water from penetrating but allow water vapour to pass through.

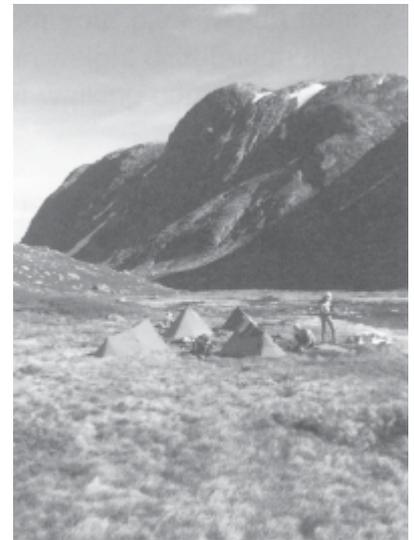
c. To keep heat in - A garment that is waterproof will almost certainly be windproof as well. The prevention of loss of body heat is more a function of the inner clothing, but the anorak does help by containing the circulation of warm air within the garment. The inner clothing provides heat insulation 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. ALL litter must be brought back with you and disposed of properly.

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 a pre-arranged plan. Do not attempt too long a distance. 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 rucksac

7. Rucksacs 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 sacs 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 sac. 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 sac 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 sacs 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 sac itself might benefit from a 500 gauge polythene bag liner.

Fig 2-3 Pack your rucksac 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 flysheet 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.

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. There are many good synthetic fibre sleeping bags available which are usually graded as 2-season, 3-season etc. A 3/4 season bag will be bulkier but warmer so is better for all-round use. Down-filled sleeping bags should be avoided for normal UK conditions as they quickly lose their insulating properties when wet.

17. It is worth buying a good quality sleeping 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.

Fig 2-4 Be prepared for all weather conditions



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.

Useful tips for camping

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

20. 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.

21. 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.
22. 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.
23. Store tins, wet clothes, ropes and anything animals will not eat, under the flysheets. Pans, stoves, water carriers should be easily within reach.
24. A small sponge is useful to mop up leak spots or spill tea, etc.

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



25. 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; 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

26. 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

CHAPTER 2

nails should be clean and washing of hands insisted on after using lavatories or before handling food.

Take rubbish home

27. All litter, tins, bottles, paper and remnants of food must be removed from the camp site. Tins should be opened at both ends, flattened and tied in a polythene bag. Glass is unnecessary when plastic containers can be used, but on no account must they be smashed. Polythene bags are particularly lethal to animals.

28. Where there are no toilets a latrine trench should be dug. 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**

29. Stoves are potentially the most hazardous equipment that you will use so it is vital that you receive proper training in their use and **ALWAYS** stick to the instructions. The approved stoves for use in the Air Cadets are gas, Meths burners, of which the Tragnia is the most well known, and those based on solid/gel fuels such as 'Greenheat'. There are a number of pressure stoves available which use methylated spirits or petrol but these are not to be used during ATC activities or DofE expeditions. Open fires (camp fires) are not to be used because of the environmental damage that they cause.

Safety Precautions**Stoves need careful handling**

30. **General.** On no account are stoves to be used inside the tent and normally they should be placed at least one metre away on a firm surface where they are less likely to be knocked over. Stoves are only to be refilled or canisters replaced well away from tentage or any naked flame

31. **Gas Stoves.** Gas stoves are clean, easy to use but need to be shielded in windy conditions. As gas is heavier than air, canisters are not to be stored inside the tent as a leak, apart from the danger of explosion, could cause suffocation. Before use check that there has been no damage during transit and, when replacing the canister, ensure that it is correctly threaded onto the body of the stove. Only stoves which use screw-in cartridges or canisters with self-sealing valves are to be used.



32. **Spirit Stoves.** Spirit stoves consist of an aluminium body which holds a methylated spirit burner (the Trangia is the most well known) and are lightweight, compact and burn well in windy conditions. However, Methylated spirits is highly volatile, has a low flash point and, in strong sunlight, burns with a virtually invisible flame. Therefore, it is vital to follow the following instructions.

- a. Before refuelling it must be confirmed that the stove flame is extinguished. This can be done by shutting the simmering ring for a short period of time and may be confirmed with the use of a wooden or small paper spill.
- b. The stove must be allowed to cool to touch before replenishment commences. As an additional control measure the spirit burner should be taken to the fuel and not the reverse. In that way any residual heat will be noticed
- c. Due to the high risk of flashback or spillage, stoves are only to be filled from a multi-fuel bottle, fitted with a safety valve. Approved polythene bottles with safety valves are available from "TRANGIA" and other manufacturers. Alloy bottles are permitted but are not suitable for long term storage of fuel due to corrosion. Screw top bottles, eg: those distributed by "Sigg" are insufficient to protect the user from flashback and must not be used unless fitted with a safety valve, eg Trangia.

33. If these precautions are followed, the likelihood of a tent or clothing catching fire is remote. However, if this occurs, a small internal flame can be quickly smothered

by using a sleeping bag or clothing. However, if the roof or walls catch fire, it is vital to get out fast. Poles and, if necessary, the main guys, should be collapsed to smother the fire. It is useful to have a small penknife handy to cut through the canvas if the fire prevents you getting out of the entrance.

Stay alert

34. If anyone in the party is unfortunate to suffer major burns resulting from a stove flaring up or other causes, it is vital, after preventing further burning, to take the following action.

- a. Douse the affected area with large quantities of cold liquid using a soaked towel or similar if necessary. Water is the obvious choice but lemonade or milk can be used if water is not available. Continue to douse the area for at least 10 minutes. This will help to relieve the pain and will assist in preventing further tissue damage.
- b. While this treatment is taking place, arrange for the casualty to be evacuated to hospital. If in doubt call the emergency services anyway - it is better to be safe than sorry.
- c. Do not touch or remove any clothing which is sticking to the burn or apply any ointments.
- d. Try to prevent infection of the wound by improvising some form of clean, dry covering such as a triangular bandage or even a plastic bag or cling film.
- e. Conduct a regular check of the casualty's airway, breathing and circulation and watch for the onset of shock.

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.

Recognition and Treatment

How to spot Hypothermia

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

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

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.

Prevention is better than cure

Effects of Heat

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

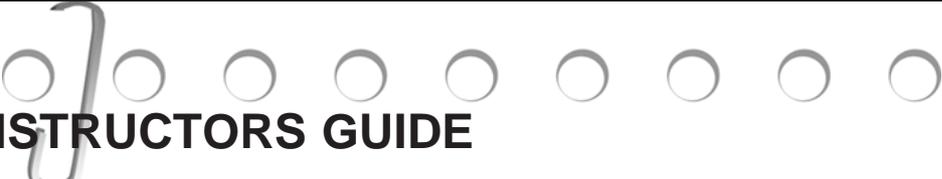
Try to keep cool

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

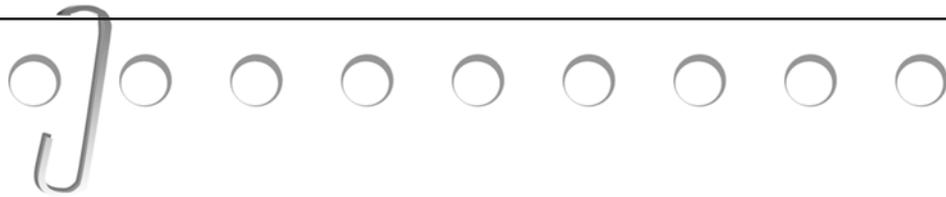
ADVENTURE TRAINING - GENERAL POLICY - (ACP 17 CHAPTER 1)

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. Canoeing, Sailing, Rock Climbing, Caving, Skiing, Snorkelling etc.
 - c. 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).

HILL AND FELL WALKING LEADER QUALIFICATIONS

1. All trekking activities where cadets are involved are to be supervised by an appropriately qualified and authorised leader. This may include those personnel who still hold a site/area authorisation under the Competence Through Experience (CTE) scheme. The recognised qualifications and their remit are:
 - a. **Mountain Leader (Summer) Award (ML(S)):** Able to lead groups in mountainous or remote country in summer conditions. Although the Award is not aimed at personnel who wish to lead groups overseas, authority can be given by HQAC (Phys Ed) for suitably experienced ML(S) award holders to operate outside the UK. Instructor:cadet ratio 1:8 (experienced) 1:6 (novice).
 - b. **Mountain Leader (Winter) Award (ML(W)):** As above but able to lead people in winter conditions defined as the time of year when snow or ice prevail or are forecast. Instructor ratio 1:4.
 - c. **Walking Group Leader (Award (WGL)):** Able to lead groups in open, uncultivated, non-mountainous high or remote country known variously as upland, moor, bog, fell, hill or down. Such areas should be enclosed by well-defined boundaries to prevent the group entering areas in which the movement on steep or rocky terrain is required. Areas of remoteness should be easily exited in a few hours. Instructor:cadet ratio 1:8 (experienced) 1:6 (novice).
 - d. **Level 2 Award in Basic Expedition Training (BEL).** Holder of this award may operate in lowland country and on the fringes of wilder countryside provided the following conditions are met:
 - (1) The routes generally follow well-defined tracks and footpaths which can be followed easily.
 - (2) Gentle to moderate rolling terrain across low lying rural countryside, farmland, valleys or forest with no steep slopes to negotiate.

CHAPTER 1



- (3) The routes are within 30 minutes of a road or accessible refuge.
- (4) Routes should be enclosed by a clearly defined boundary system e.g. roads, vehicle tracks, walls etc.
- (5) Instructor; cadet ratio 1:10.

e. **Mountain Leader Training.** Although not a qualification in itself, personnel who have completed this training, subject to site-specific approval, may lead groups in easy hill country. They may also be permitted to lead in more difficult terrain under the guidance of a ML(S) award holder. Instructor:cadet ratio 1:6.

f. **Walking Group Leader Training.** Personnel who have completed WGL training, subject to approval, may lead groups within the BEL remit above.

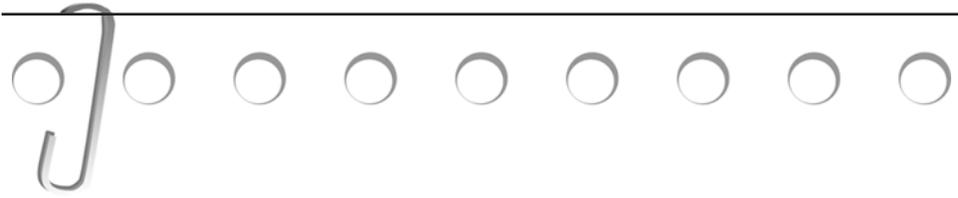
g. **ATC In-house Trekking Scheme.** On completion of defined training and assessment, this scheme will permit BEL Award holders to lead groups on site-specific routes at the lower end of the WGL remit. Instructor ration 1:6

2. In addition to the above NGB awards, there are a range of Joint Service Trekking qualifications, such as the JSMEL and MLT which allow personnel once authorised to lead in the appropriate countryside. Further details of the JSAT Scheme can be found in JSP 419.

Wild Country Areas in the UK



CHAPTER 1



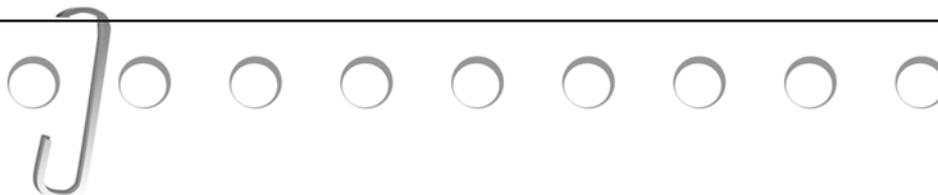
USE OF PRIVATE LAND OR WATER

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 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. 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.

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.
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.

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, 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 in ACP 17.

SUPERVISION

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 also qualified in the activity they organise and are to be responsible for all training and safety decisions.

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:

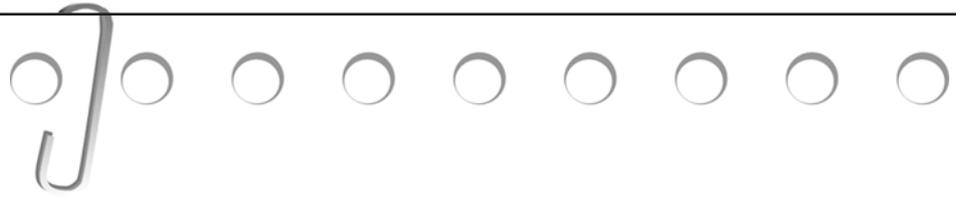
- a. Activity equipment, ie: specialist equipment such as ropes, canoes, caving helmets, life-jackets etc.
- b. Personal equipment; anoraks, boots, etc.
- c. Emergency equipment. Depending on the type of activity and the length of time to be spent travelling each day, certain items are essential for 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.

GENERAL ADMINISTRATION

1. 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.

2. 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 not to

CHAPTER 1



pursue 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.

3. 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 assessed. These are to be amplified in Squadron/Wing training orders, using appropriate authoritative publications as sources of information.

4. 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).



INSTRUCTORS GUIDE

CAMPCRAFT AND EXPEDITIONS

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 are open each year from February 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 former Quinetor airfield 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

Llanbedr

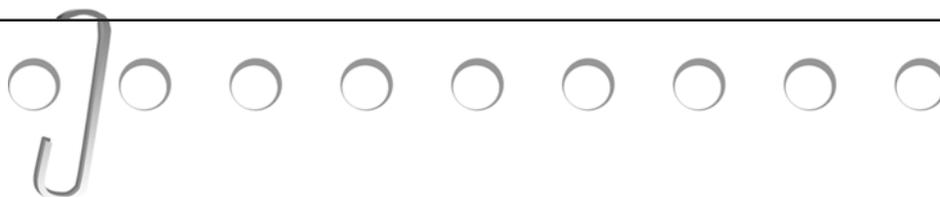
Gwynedd

LL45 2PX

Tel: Llanbedr (STD 01341 241594) (Visitors)

(STD 01341 241554) (Office)

CHAPTER 2



ELIGIBILITY FOR ATTENDANCE

5. Cadets. To be eligible for attendance, an ATC cadet must be enrolled 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. However, only qualified staff may conduct AT activities with the cadets.

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. Places on under-subscribed courses will be offered to Wings on a first come, first served basis.

REGIONAL/WING ADVENTURE TRAINING CENTRES

GENERAL

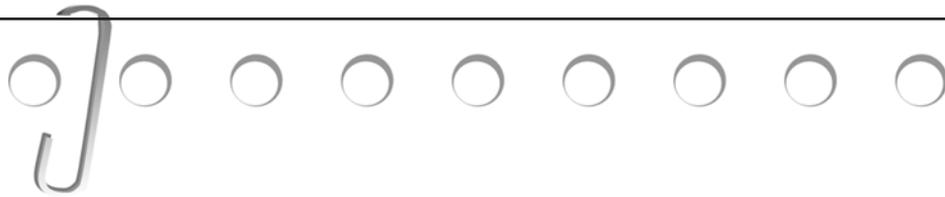
1. In addition to the Corps Adventure Training Centres at Llanbedr/Windermere, which are administered by HQ Air Cadets (PEdO) there are a number of Regional/wing Adventure Training Centres. Regional/wing Headquarters controlling these Centres have indicated their willingness to allow ATC groups from 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.

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.



INSTRUCTOR TRAINING COURSES

1. HQAC runs a comprehensive programme of AT instructor training and introductory courses at the NACATCs. All adult ATC staff and instructor cadets are eligible to apply. Also, adult staff are eligible to apply for courses run at the various Joint Services AT Centres. As these centres are geared primarily at regular servicemen, a high standard of physical fitness is required. Additionally, the Joint School for Adventurous Training Instructors (JSATI) at Llanrwst runs ML and BCU courses for ATC staff.
 2. Full details of these courses are available on the Air Cadet Internet site or may be obtained from HQAC (Phys Ed).
-

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.

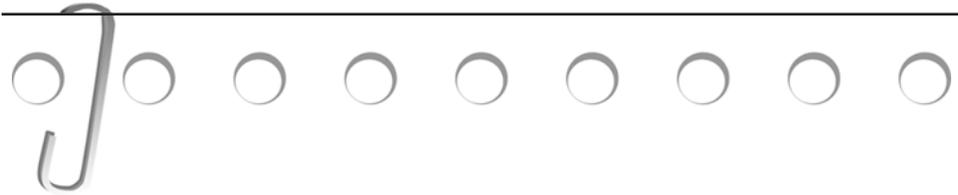
PARKING

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 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.

CHAPTER 2



- 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.

ACCIDENTAL FIRES

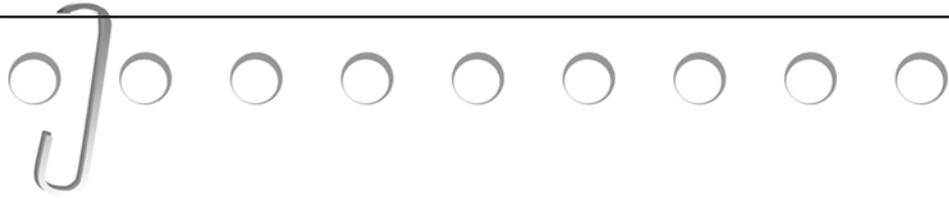
- 14. Accidentally started fires can cause extensive, expensive and long-term damage to areas of moorland or woodland. Concern over fire is a significant reason for landowners not wishing to allow public access to areas of open country. It can take between 10 and 20 years for a burned heather moorland 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.

CHAPTER 2

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.

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

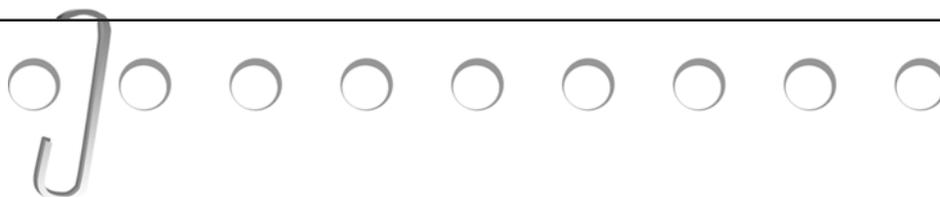
27. Fires can be very enjoyable, but they can also cause local damage and so need to be monitored very closely. In the first instance you must seek the landowner's permission before lighting a fire. Although a good fuel source, dead wood is an important part of natural cycles, so keep fires small to 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 dismantling 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.

CHAPTER 2



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.

LIGHTWEIGHT CAMPING STOVES – USE AND OPERATING PROCEDURES

GENERAL

1. Lightweight camping stoves, particularly those powered by gas, liquid and, to an extent, solid fuels, are potentially lethal if not properly operated. Therefore, this instruction must be read by all staff responsible for the training of cadets in the use of these stoves.

2. The following generic lightweight camping stoves are authorised for use by cadets:

- a. Methylated Spirit (Meths) Trangia-type stoves.
- b. Camping Gas stoves with screw-in self-sealing canisters.
- c. Solid fuel and gel stoves including Hexamine and 'Greenheat'.

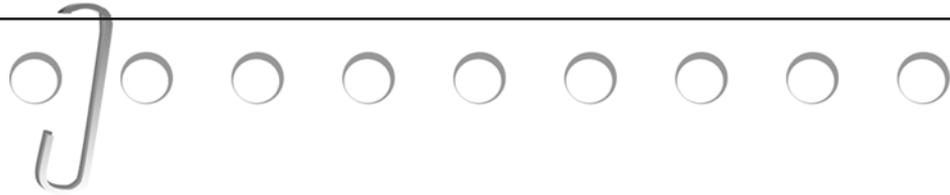
3. Pressure stoves (primus type and multi-fuel) and gas stoves which use non screw-in canisters are not to be used by under 18 cadets. However, multi-fuel pressure stoves (MFPS) may be used by adult staff and instructor cadets provided they are competent in their use. In the event of MFPS having to be used by cadets in remote overseas locations due to the difficulty in obtaining a specific fuel, then this must be pre-approved by HQ AC (Phys Ed). Any request must be accompanied by an appropriate Risk Assessment.

4. There are numerous manufacturers of stove; therefore, before any stove is used for cadet activities it is to be fully evaluated for safety and fitness for purpose by the competent person. This includes cadet-owned stoves. As far as the Trangia 'clones' are concerned, their design and construction should be broadly comparable to the genuine article.

5. The use of large base-camp stoves (including heaters and lighting) lies outside the scope of this instruction and is the responsibility of individual sqn cdrs to ensure that they are safe, fit for purpose and that a comprehensive Risk Assessment is completed. If necessary, advice should be sought from the ACO Regional H&S Adviser. These stoves will present similar hazards to the lightweight versions but on a larger scale so it vital that the equipment is professionally serviced and checked. Cadets are not to operate this equipment unless directly supervised.

AUTHORISATION TO TRAIN CADETS IN THE USE OF LIGHTWEIGHT CAMPING STOVES

6. Training in the use of lightweight camping stoves is only to be undertaken by authorised adult staff and instructor cadets who have demonstrated competence in the use of the stove in question and an ability to teach the key skills to others. The BEL and ML(S) awards are not in themselves proof of competence as staff may not have used a particular stove for many years or not at all. Cadets are not to be allowed to use stoves before being properly trained. This training is to be recorded in their D of E logbook and/or their personal files. Details of those staff authorised to conduct training is also to be recorded and signed off by the Sqn Cdr or his nominated representative (eg Sqn AT officer). Alternatively, this authorisation process may be placed within the remit of the WATTO and recorded in the Wg AT register under local arrangements. Before training cadets, the instructor is to re-familiarise themselves with the relevant operating procedures.



RISK ASSESSMENTS

7. Generic Risk Assessments are available for the 3 types of approved stoves are available on the ATC internet. However, it is the responsibility of the leader of the activity to ensure that a specific Risk Assessment is written for the stoves being used and that both staff and cadets are aware of its contents. Operating procedures are to be read in conjunction with these Risk Assessments.

STORAGE OF FUEL

8. Instructions and advice on the storage of fuels/gas is contained in ACP 5. During exercises and expeditions only sufficient fuel/gas is to be carried to fulfil the current requirements. Further clarification can be obtained from the ACO Regional H&S Adviser who can also advise on Risk Assessments (including COSHH assessments).

THE REQUIREMENT FOR CONTINUING SUPERVISION

9. Used sensibly by properly-trained cadets, lightweight camping stoves are safe. However, particularly with the Trangia-type stoves, but also with the others, lack of concentration, horseplay or lack of appreciation of the potential risks can easily lead to an accident. Therefore, even when trained, cadets are to be supervised appropriately. This may involve close supervision during their initial expeditions but as they gain experience and maturity, it is important that they be given responsibility for their own safety (for example during DofE qualifying expeditions). In these cases, the cadets should be reminded of the potential hazards and given a copy of the relevant operating procedures. As a recent accident has highlighted, this supervision must be extended to general activities taking place in the vicinity of cooking areas. For example, great care must be taken to ensure that there is no chance of footballs or other flying objects striking cooking equipment whilst it is in use.

CHAPTER 3

**INSTRUCTORS GUIDE**EXPOSURENOTES 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.

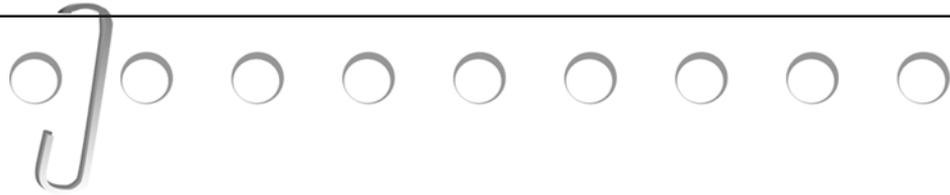
b. It is the combination of fatigue, cold, anxiety or mental stress which is specially dangerous. The elements in this combination will vary greatly with the individual, as will the individual's susceptibility to some or all of these factors. In considering exposure to cold, it is well to bear in mind 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 or 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 of ten unrecognised danger among those, and particularly by the young, who undertake mountain expeditions in bad weather conditions.

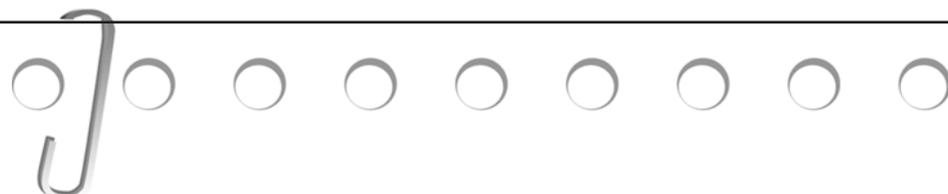
3. Signs and Symptoms of Exposure. It is not always easy to decide early enough that you have a mild case of exposure on your hands. It is very important to do so, since it may be possible to avoid a crisis if, at the onset, you are aware of the symptoms and can begin to treat them. The following are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



- 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.



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.

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.