Chapter 8

Mountain Hazards

In the book Dragon's Wrath, Reg Pearse, the well-known writer on the South African Drakensberg, gives the following accident statistics for the Drakensberg, from 1906 up to approximately 1985:

There were 55 recorded deaths in total:

- Twenty-nine deaths as the result of some 50 falls (in nine cases the person was climbing alone or had strayed from his group).
- Five deaths by lightning.
- Four deaths as a result of exposure.
- Three deaths as a result of 11 rock falls.
- Three deaths as a resuft of a flash flood.
- Three deaths out of nine people who fell seriously ill.
- Three missing persons.
- Two deaths by fire.
- Two deaths by drowning.
- One death from snake bite.

(It is significant that more than half the deaths were as a result of falls, often a preventable cause of accidents.)

As Mr Pearse points out, these figures show that, statistically, the Drakensberg is a safer place than the streets of Johannesburg, Durban or Cape Town. Nevertheless, even a minor accident in the mountains can have potentially serious consequences, since help is usually far away and rescue and evacuation are complicated by the difficult terrain and often by bad weather as well. A number of deaths from accidents in the mountains can be ascribed more to the delay involved in getting the injured person to hospital than to the actual effects of his injuries.

The leader of a party to the mountains must, therefore, be aware of the hazards inherent in the mountain environment and do everything in his power to reduce the chances of an accident or mishap occurring.

Bad weather

Most accidents involving bad weather occur as a result of lack of forethought. Act before the weather forces you to act.

Precautions against bad weather

Bad weather on its own can lead to loss of life. More often, bad weather plays a contributory role in emergencies, for example, when members of a group become separated from one another in thick mist; when a party loses its way; or when the party is forced by bad weather to deviate from the planned route. This can happen extremely easily in bad weather conditions, especially in thick mist. For this reason it is generally better to pitch camp and to sit out bad weather before moving on.

It is your duty as tour leader to study the weather patterns of the region you intend to visit with your group. Obtain weather predictions for the area and period of the outing. In most mountain regions the weather can change drastically in a very short time: in the Drakensberg and the Cape mountains it has been known to snow even in December. The group must be prepared at all times for any weather conditions.

Do not depend on the availability of a hut or cave for your overnight stay. If the group loses its way, if an accident happens, or if the weather becomes very bad (in case of snow or mist, for example) it could easily happen that the hut or cave is not reached. Waterproof and windproof sleeping bag covers (bivy bags) might be a life-saver in such a situation. The group should carry enough tents to provide shelter for everyone.

If driving snow or thick mist seriously reduces visibility, one's ability to judge whether something is close or distant may also be affected. In such conditions it is very easy to walk over a cliff edge. Take precautions against this possibility by throwing something, such as a glove or a rock, on the ground in front of you, walking up to it, and repeating the procedure. You should be ready to take a compass bearing if the mist clears for a few seconds.

Hypothermia resulting from exposure has also claimed a number of lives in the mountains (hypothermia is discussed in detail in Chapter 10). Low temperatures on their own are not extremely dangerous. The wet bulb temperature is a better indication of how a person would experience the cold (see table in Chapter 1). Remember that wet clothing loses up to 90 per cent of its insulating capacity in a strong wind. Everybody must carry adequate warm and windproof clothing; they must put on their warm clothing before they start to feel cold, and waterproof garments before they get wet.

Wind, wet and cold are a deadly combination. Hypothermia quickly results in impaired judgement: stop and seek shelter before members of the party reach this stage, even though this might mean that the objective of the hike or climb has to be abandoned. Try to get out of the wind at all costs.

Ensure that the members of your group eat enough food to meet their increased energy requirements in cold weather. For persons with a high metabolic rate it is particularly important in cold conditions to eat small amounts regularly when doing hard walking. Sweets, chocolate, energy bars, biscuits, nuts and raisins, tea (with sugar), and powdered cooldrinks are all suitable.

In bad weather, if visibility is poor or non-existent, if you are not quite sure where you are, or if the members of your party may be exhausted and cold, it is very easy for one or more persons to stray from the main group and to be injured or killed in a fall or to die from exposure. Bear in mind the following points:

- Carry the correct equipment. People who lack adequate clothing, equipment, food or shelter often continue moving over dangerous terrain or unknown terrain when the prevailing bad weather conditions (poor visibility, extreme cold, high wind) would have forced adequately prepared groups to pitch camp.

- Do not allow the group to split up. The importance of this point cannot be overemphasised. Every person must at all times be able to see the person in front of him and the person behind him, and everyone should be instructed to sound the alarm immediately if he can no longer see either of them. Novices tend to get strung out, particularly when tired: the appointment of a rearman helps to prevent the group splitting up.

- Take great care on wet rock. Wet rock is slippery and dangerous; the longer the group moves across it, the greater the chance becomes that someone will fall and hurt himself. If someone becomes temporarily separated from the group and falls into a stream or pool he might easily be knocked unconscious and drown.

- Do not attempt to climb a route you cannot reverse. It is much easier to climb up than to climb down; it is therefore much easier to climb into trouble than to extricate yourself or your party from it.
- Do not carry on walking if visibility is poor unless you know the area very well.
- Finding a safe route down a mountain in the mist is often dangerous, unless you know exactly where you are and how to reach your destination — and even then it may be difficult.
- During a thunderstorm you should ensure that nobody in your group represents the most prominent object in the area. People should not stand or walk or sit on peaks or ridges, but should rather sit in lower-lying places and avoid tall trees (see the section on lighting below).
- In dense mist or fog the leader should normally lead from the front, with the next most experienced member bringing up the rear.
- If, as sometimes happens on top of the Drakensberg, the wind is strong enough to blow people off their feet, the group should crouch or crawl, since trying to remain upright would require too much energy. Try to find a ridge behind which to shelter from the wind.
- Keep well back from cliff edges in gusty and windy conditions.

Lightning

Lightning kills more than 200 people in South Africa each year. Although it is not the most serious mountain hazard, it has resulted in a number of deaths in the mountains. The very nature of mountaineering means that the mountain climber gets to those places where lightning is most likely to strike, namely the highest point in the area.

The basic precaution to take when an electrical storm or thunderstorm threatens is to get off high ground, find a safe place in the open or a safe zone 'shaded' by a high point and sit out the storm.

U.S. lightning deaths and injuries, 1959-1987*

- 2 801 deaths
- 7 356 injuries (average of 100 killed, 250 hurt each year)
- 80 per cent male; 20 per cent female. Average age of victim: 28
- 2 801 deaths:
- 28 per cent in open fields, including sports fields
- 17 per cent under trees 13 per cent on or near water 6 per cent on or near tractors 4 per cent on golf courses 32 per cent in other places or situations * (Source: Weatherwise, August 1988)

What is lightning?

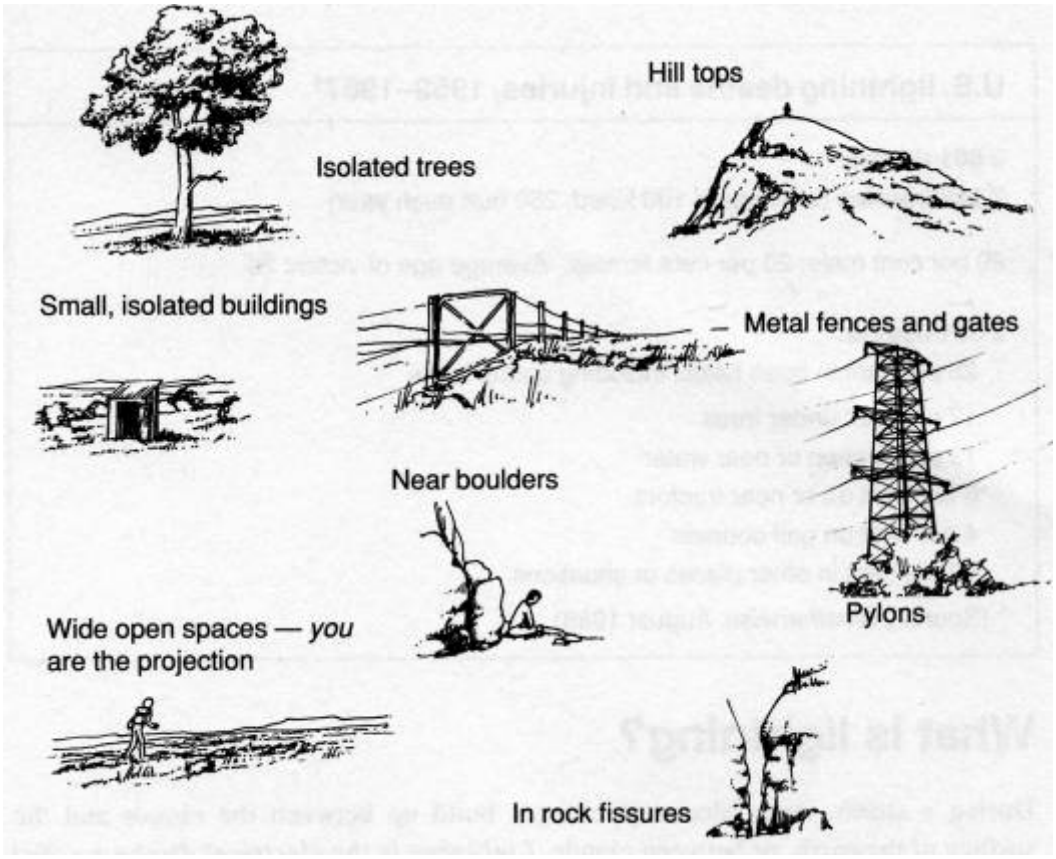
During a storm, static electrical charges build up between the clouds and the surface of the earth, or between clouds. Lightning is the electrical discharge that occurs when the air, which normally is not an electrical conductor, is ionised when the tension exceeds the threshold limit of the air. Such a discharge usually takes place to a prominent or high point, since the current potential is the highest there. When this discharge takes place, electrical currents flow outwards from the point of discharge. These currents

tend to follow natural routes such as cracks in the rock. In the case of compact, wet rock, the currents will run across the surface of the rock.

Lightning can therefore be dangerous in a number of ways. One can be struck directly by a lightning bolt, or one can be injured through surface conduction or by induced currents in the vicinity of a lightning strike. While to be struck by lightning is not always fatal, it could have fatal results, for example, if it causes a climber to fall.

Precautions against lightning

If you bear these facts in mind, it is fairly easy to take precautions against being struck by lightning. First, reduce the chances of a direct lightning strike. Secondly, avoid situations in which surface electrical currents can run through the body, injuring important organs such as the heart and lungs.



If no shelter is available, keep away from projections

The approach of an electrical storm is usually indicated by approaching thunder clouds, or if metal objects start to buzz, hair becomes raised, skin begins to tingle or metal objects begin to spark or glow. If any of these indications are present you should immediately get away from ridges, peaks, isolated trees and other projections which tend to attract lightning strikes.

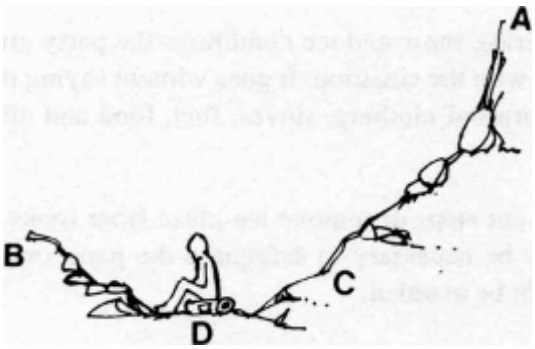
Precautions should be taken even if the thunderstorm is not directly overhead, since lightning may strike quite far away from the parent cloud. The following general precautions should be taken to reduce the risk posed by lightning:

- Avoid projections that are more likely to be struck, for example, a solitary tree on a grass plain, or a mountain peak. A forest is safer, but stay between the smaller trees. A deep cave is safe, but a shallow cave or overhang is not.

- Rather stay on the middle of a ridge than at the end points, but get down from the ridge if

possible.

- Avoid wet cracks and funnels. Lightning will run down a crack in preference to solid rock, particularly if the rock is wet.



During a thunderstorm, seek shelter in one of these places. Amongst trees of similar size or on your rucksack, tent or rope on a scree slope in the safe zone of a hill — if the peak of the hill (A) is at least 6 m high, the safe zone is this distance horizontally. Sit at point D, and keep away from the slope.

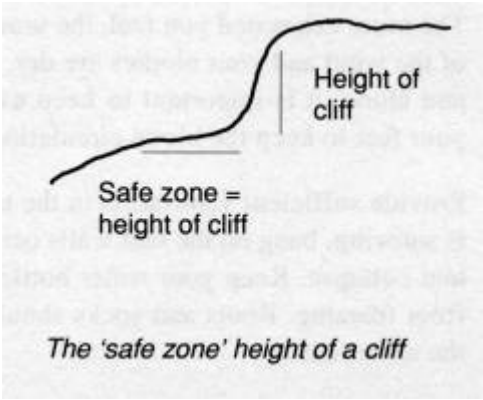
Prevent surface currents from flowing through the body: sit on some kind of insulation, e.g. a dry rucksack or rope, or a loose rock on a scree slope. Crouch down, keeping your hands away from the ground.

Avoid metal fences and gates — you could be killed miles away from the actual lightning strike if you touch a fence that has been struck by lightning.

Sit on the edge of a ledge, as far away from the rock face as possible. Place any protections, such as ropes and rucksacks, across the expected direction of the current. Avoid abseiling on a wet rope.

If you are in a group, spread out and stay a few metres apart.

Get away from open water, metal equipment, wire fences, rails, and metal pipes.



The 'safe zone' height of a cliff

Snow and ice

Although seldom encountered in South Africa, snow and ice can constitute a hazard in the Drakensberg and the Cape mountains.

Snow and ice conditions pose a number of problems. Walking in soft, knee-deep snow is slow and tiring. Hypothermia, perhaps leading to death from exposure, is an ever-present danger. Simple routes can become difficult and hazardous under a mantle of snow and ice. Route-finding is complicated, and even easy paths become treacherous if ice-glaze is present; slips are a serious hazard.

If there is any likelihood of encountering snow and ice conditions the party must be comprehensively equipped to deal with the situation. It goes without saying that tents, adequate warm wind- and waterproof clothing, stoves, fuel, food and other equipment must be carried.

A single ice-axe may be essential to cut steps or remove ice-glaze from rocks on ascent or descent paths. A rope may be necessary to safeguard the party on icy traverses or steep slopes which cannot

be avoided.

Instruct the group in good time to put on their snow goggles if they are new to snow, otherwise they might wait until it is too late. (A pair of snow goggles can be improvised by making a tiny hole for each eye in a piece of cardboard.)

Shelter

Shelter from the wind and the cold is the key to survival. If the weather suddenly turns to snow, sleet or ice, the sensible thing to do is to find shelter as early as you can and to wait for conditions to improve, rather than struggling on until exhaustion sets in. 'When in doubt, sit it out.'

The more exhausted you feel, the more important it is for you to eat. If you are out of the wind and your clothes are dry, you can try to sleep. If you are wet through, and alone, it is important to keep awake. Occasionally move around and stamp your feet to keep the blood circulating.

Provide sufficient ventilation in the tent to keep condensation to a minimum. If it is snowing, bang on the tent walls occasionally to keep the walls clear and prevent tent collapse. Keep your water bottle with you in your sleeping bag to prevent it from freezing. Boots and socks should be kept in a plastic bag inside the tent for the same reason.

If you are caught without a tent in a heavy snowfall, remember that being in the snow is usually warmer than being out of it, due to the windchill factor. To shelter in a snow trench, choose a depression or a trench and pile excavated snow around the top to form a wall or, if possible, a roof. To make a snow hole, find a bank in the lee of a slope and dig a hole horizontally in it. Wear your waterproof clothing while digging. Avoid closing air holes if you are in a bivy bag or wrapped in a tent.

A party carrying the proper survival gear should be able to sit out and survive the worst conditions that can be encountered in our mountains. (See also Chapter 2 on emergency bivouacs.)

Flash floods

Flash floods occur often in the mountains, because steep slopes and the rocky terrain cause most of the rainwater to reach the rivers as runoff water. A shower higher up the river can cause a flash flood, even though not a drop of rain is falling where you are standing. For this reason you should avoid camping in a dry river bed, even if it does not look like rain.

A mountain stream which comes down in flood is a wall of water that tosses around huge boulders and trees with the greatest of ease — you and your entire party can be killed if you find yourselves in the wrong place at the wrong time. Never try to cross a river in flood — if you have to ford the river, a rope must be used. Even a small stream should be crossed with great caution, and a rope should preferably be used. Remember: it is easy to slip and hit one's head against a rock, and, once unqpnscious, one can drown in very shallow water. (River crossing is dealt with in Chapter 4, Hiking Skills.)

Dehydration

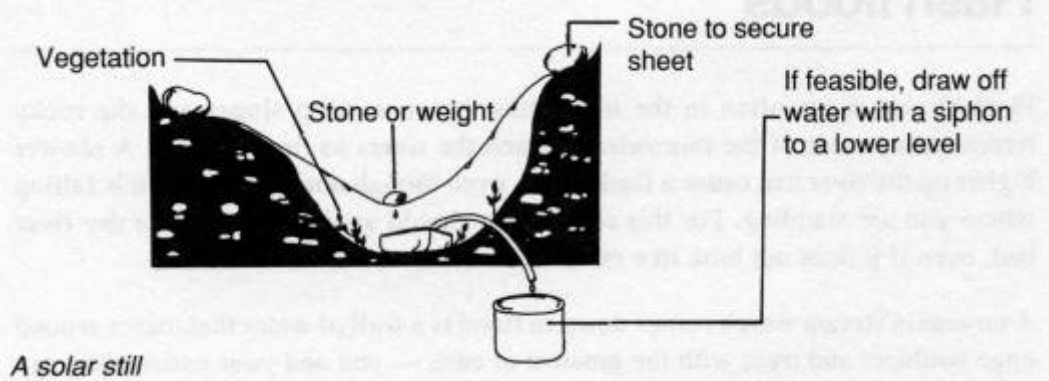
Always ensure that your group has sufficient water (two to eight litres a day, depending on circumstances). If you are doing a strenuous hike, as much as a cup of water every 15 minutes (one litre an hour) may be required to prevent dehydration.

Obtaining emergency supplies of water

In certain of the hiking areas in southern Africa an emergency such as getting lost may lead to the party having insufficient water. The following emergency measures might help you to obtain water:

- Look under boulders or crevices in stream beds.
- Carry a short length of thin plastic pipe with which to obtain water from small cracks or sources.

- Watch birds as indicators of water at dawn and dusk.
- A solar still can be constructed with plastic; plastic bags can also be used to collect transpiration water from plants.
- If all else fails, distilled urine is potable. Vegetation



A solar still

How to retain fluids

To keep fluid loss to a minimum in an emergency, take the following precautions:

- Avoid exertion.
- Rest.
- Do not smoke.
- Stay in the shade. If there is none, erect a cover.
- Do not lie on hot ground.
- Eat as little as possible (water is required for digestion; in particular, a lot of water is required to break down fat).
- Never drink alcohol (it requires water to be broken down and is a diuretic).
- Talk as little as possible and breathe through the nose, not the mouth.

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Snakes

Snakes do not represent a major danger to hikers and climbers. Most snakes are not venomous — only 14 of the 140 types of snakes found in South Africa could cause death — and they are generally very shy creatures. The adder is an important exception, because it often does not try to move away when a human or animal approaches. However, even in the case of a puff adder bite one has several hours to carry out an evacuation.

When confronted by a snake it is best to stand still until the snake moves off. In

summer one should take precautionary measures, including considering wearing boots. You should be particularly careful where you put your hands, for example when collecting firewood or when climbing up a steep grassy slope. Of all reported cases of snake bite in South Africa, 75 per cent were bitten on the legs and 15 per cent on the hands.

You should learn to recognise the most common poisonous snakes in the area you intend to visit. A number of excellent, well-illustrated books have been written on this topic. Positive identification of the type of snake that caused the bite may help in deciding on the correct course of treatment. However, this is not as important as commonly believed, since modern antidotes are effective for all snakes, with the exception of a boomslang. You should certainly not consider searching for a snake, since this could result in a second bite.

In the event of snake bite, the most important rule to follow is to immobilise the affected limb, to treat the victim for shock, and to get him to a doctor as soon as possible. (See Chapter 10 for more information on the treatment of snake bite.)

Loose rock

In the Drakensberg particularly, both the basalt and the sandstone are very brittle and can easily crumble beneath your hand or foot. Test a grip or hold carefully by hitting it with the side of your clenched fist — if it moves or sounds hollow, it may not be safe to hang onto.

Rock falls have killed a number of people. A rock fall can occur naturally or it may be caused by a member of the party dislodging a rock. Large groups are particularly vulnerable. The party should move diagonally, and in a diagonal line, up or down a slope scattered with loose boulders; this ensures that nobody is in the line of descent of a rock which is dislodged and begins to roll down the slope. Be careful when throwing down a rope to someone lower down or when pulling down the rope after an abseil.

Rock climbers and hikers in training situations on easy rock faces should wear helmets. Many head injuries sustained while mountaineering could have been avoided if the climbers concerned had worn helmets.

Never, even in the remotest area, throw stones or rocks over a cliff edge. Someone could be below you, or you could dislodge other rocks lower down.

Veld fires

Not only can veld fires cause incalculable damage to the ecology, but they can also result in loss of life. Avoid making open fires, even in areas where there are no regulations against it. On hot, windy days you should not light any fire. (See Chapter 2, Camp Craft, for general fire precautions to take during a hike.)

A veld fire can spread at a terrific speed, particularly if it is fanned by the wind. A fire also burns much faster uphill than downhill. If you are threatened by an approaching veld fire, there are some things you can do:

- Try to find shelter amongst rocks, or try to get into a river or a pool.
- Remove synthetic fibre garments; if time allows, replace them with wet woollen or cotton clothing.
- If time allows and the fire is very large, make a firebreak by setting fire to the grass close to you; then stand in the middle of the burnt area until the main fire has passed you by. Cover your face and exposed parts of the body with wet material if possible.
- If all else fails, wear all natural fibre garments you have and run straight through the fire at a point where it is at its narrowest and least intense; then roll on the ground on the other side to extinguish any burning clothes.