

## AVALANCHE

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In early 1990 I was very privileged to be awarded a Churchill Fellowship which enabled me to spend six weeks touring Colorado, Utah, Idaho and Wyoming in the USA and Alberta and British Columbia in Canada, studying mountain and ski safety. (I understand that I am the sixth member of the Cairngorm Club to become a Churchill Fellow which must be a record for such a body!)

One area which I examined was the field of avalanche. If there was one area in the world one might wish to go to to learn about this subject, then one could not do better than the western states and provinces of North America. It is a major concern of all the various authorities in winter and whilst great advances have been made; in positive control, forecasting and public awareness, avalanches remain a killer of outdoor sportsmen/women and others in significant numbers each year.

North America suffers, where we do not, from situations where roads and highways go through canyons or over mountain passes which are highly avalanche prone and consequently all manner of people are at risk, from ordinary motorists to Highway Department personnel. Such incidents have sometimes resulted in casualty figures of horrendous proportions; in March 1910 in Washington State – 96 people killed; March 1910 in British Columbia – 62 fatalities; March 1915 in British Columbia – 57 dead; February 1926 in Utah – 40 dead; February 1965 in British Columbia – 26 killed. These are not total figures for the months in question, they are the numbers of multiple fatalities caused by individual avalanches! The 96 died in two passenger trains which were swept into a deep canyon. In other cases, whole mining towns have been wiped out with very substantial buildings reduced to rubble.

Whilst these are extreme cases, smaller avalanches regularly catch out individuals or small groups. If one looks, for example, through the statistics for 1974 one finds such cases as: January in Wyoming – 3 ski mountaineers killed; January in Washington – 2 snowshoers killed; February in Alaska – 1 snowplough driver buried alive in his cab; November in Washington – 1 climber killed; November in Colorado – ski patroller dead. These are just random selections from accident lists that make very depressing reading. There is even a recorded case of an ordinary workman, walking along the outside of the building where he was employed when snow slid off the roof, buried him, and killed him! Whilst more recent figures are slightly less depressing they still give considerable cause for concern.

In the month preceding my arrival in North America 8 people had died as a result of avalanches and all of them were outdoor sportsmen and women. What makes such figures all the more worrying is that one often finds the victims to be persons with many years of experience in their chosen recreational activity. Scottish avalanche incidents have often shown the very same to be true here.

It is generally agreed by those involved in mountain safety that there remains an impression in people's minds that avalanches are huge walls of snow that thunder downhill towards one. Such avalanches certainly do occur but they happen most commonly within 'thriller' films having been set off by a rifle shot from the 'baddie' only for our hero to ski at great speed safely out of the slide's path. Unfortunately, the reality is that most avalanches are set off by the skier or climber himself who crosses a slope of unstable snow which then breaks up around him and sweeps him downwards in an uncontrollable fashion. In North America, fatalities usually arise through suffocating burials in the avalanche debris, whilst in Scotland more deaths probably take place through the victim striking rocks on his way down or being hurled onto boulders at the base of the slope as the avalanche comes to a halt. Such victims often sustain very extensive injuries (particularly to their head) from which one would have to be very fortunate to recover.

It is this false impression amongst even apparently experienced persons that must obviously be dispelled as a priority. Scotland simply is not generally regarded as a country prone to avalanche risk in the way that people would automatically consider the Alps, for example, to be. I'm afraid you're just as dead whether you are lowered into a grave in Calgary, Denver, Salt Lake City, Chamonix, Zermatt, Aberdeen or Manchester and the sooner more people in the outdoor pursuit community appreciate this, the better. I think that, generally, people do now recognise that suitable waterproof and windproof clothing, and skills such as map reading, are vital when visiting Scottish mountain regions (winter or summer) and that people who fail to act accordingly have probably only themselves to blame. However, it does not appear that the same applies in the field of avalanche. I'm convinced that there is a real problem of genuine ignorance. Groups such as the Cairngorm Club may well be able to help tackle this problem. I am similarly convinced, especially with the ever increasing popularity of ski touring and ski mountaineering along with the already well established winter outdoor pursuits, that our death and injury statistics will only increase unless we get the message across. This is something I have tried to do, and will continue to do, in my role as Safety Officer of the Scottish National Ski Council.

North Americans have learned to live with avalanche hazard and are now well prepared to both deal with the results and also to try to avoid them by providing forecasting advice and avalanche awareness education.

One of the most impressive sights I saw during my study tour took place one afternoon when I was at the Ski Patrol Headquarters of a major resort in Utah. Whilst speaking with the Patrol Supervisor, an avalanche was reported where two persons were thought to have been buried. Patrollers were immediately directed to the scene, taking with them packs of probes and snow shovels kept in Patrol Bases in readiness for just such an event. Avalanche rescue trained ski instructors and lift attendants also made their way to the site. In the meantime, some Patrollers blocked off access to the area whilst lift attendants prevented members

of the skiing public from using tows which might have taken them towards the area. Ski Patrollers from the neighbouring resort arrived to assist. Snowmobiles and piste grooming machines were also directed to the area. In less than half an hour, upward of thirty people, assisted by search and rescue dog handlers, had established a probe line under the direction of the Patrol Supervisor. In under 40 minutes, the Life-Flight medical helicopter had arrived from Salt Lake City and was on stand-by near the site. The Salt Lake County Sheriff Department's helicopter was alongside and it had brought the Sheriff's Search and Rescue Co-ordinator to the incident. The Sheriff's Search and Rescue Team had attended and were near the scene ready to move in if the search area had to be extended. Lookouts had been posted back from the scene itself to scan the hillside above the searchers, which was just as well, for about 50 minutes into the operation a gully alongside the one which had avalanched then emptied and it was only speedy radio messages which allowed the probe line personnel to hurriedly retreat out of the path of the new slide which swept down onto the area they had been searching. Throughout all this, a Ski Patrol Foreman had kept a record of everyone entering the area at risk and ensured that all persons in the immediate area had avalanche transceivers for personal protection. Local radio and television station reporters arrived by helicopter and the authorities also had to cope with pressure from the media for details of the incident. A stock of further probes and transceivers was ready should they be needed.

Fortunately, the two persons initially thought to have been in the area when the slope avalanched were traced elsewhere and everyone was stood down in just over an hour. The Ski Patrol's Snow Safety Officer and the US Forest Service Snow Safety Officer then moved in to examine the scene and to try to discover why the potential of such a happening had not been spotted and to study the snow conditions to see why the slope had released.

Turning to the subject of avalanche forecasting and warning, again the state of Utah provides an excellent example. There is an Avalanche Forecast Centre for the state which is based within the Weather Forecast Centre at Salt Lake City airport. This gives ready access to the weather data which plays such a large role in the field. The centre is funded by the state and federal governments via the Forest Service and employs three full-time forecasters with 7 day per week, 5am to 5pm coverage from November through to April. It has an annual budget of \$55,000.

The Centre publicises its telephone advisory system where members of the public can 'phone in and hear a 2½ minute recorded message on present avalanche conditions and predicted risks. There are five different telephone numbers which relate to various areas within the state. A 5 minute recorded message gives more detailed information. Additionally, the public can choose to dial yet another number which then connects them with one of the forecasters and they can discuss avalanche conditions and perhaps their intentions with an expert. About 65,000 calls are made to these numbers each year.

The Centre plays an important educational role and each year its staff give

20-30 avalanche talks, lectures, and workshops, directly addressing some 2,000-3,000 people. They estimate that they reach some 100,000 people through local television, radio and newspaper coverage.

As well as receiving 'physical' information from Forest Service and Ski Patrol snow safety officers who will have compiled local data by digging snowpits etc., the Centre has computers linked up to remote data gathering stations. All the large ski resorts, and avalanche-prone highway areas, have had machinery installed which records temperature, wind speed, precipitation, snow depth etc. Such devices are normally sited at the base, mid-station, and summit of resorts. Their data can then be accessed remotely by computer links to the Centre's terminals. This then allows forecasters to make what are usually accurate predictions to a high standard.

The Centre also receives, wherever possible (i.e. unless a slide goes unnoticed in the back-country), information on all avalanche incidents, even where no injury or rescue has taken place. They encourage members of the recreational public to provide them with details of avalanches which may have gone unnoticed by professional outdoors people. This has allowed them to build up an important and very useful 'data-bank' which enables them, all the more accurately, to gauge the type of snow, wind and weather conditions which will make avalanches possible or prevalent. These historical records are being used to compile what they refer to as "Nearest Neighbour" data. In this way they can compare current conditions at any particular region or slopes with a view to determining if they are similar to those of the past when avalanches have occurred in the same place. Their eventual aim is to combine such a data-bank with the ongoing information from remote stations so that, ideally, their computer will be able to automatically generate warnings. For example, if the computer could register snow condition input from a slope at Snowbird ski resort, compares it against its historical avalanche incident records and finds similar conditions present or approaching, then it would alert the Centre who could warn the ski resort. If such sophistication can be achieved then the potential advantages are tremendous. I understand that the only other centre in the world which has reached such levels is in Switzerland.

I found that most western states of North America had similar centres although none were as technologically advanced as Utah's.

Scotland, too, is beginning to tackle this subject in a very positive fashion. Since 1987 the Scottish Avalanche Project, funded via the Scottish Sports Council, has established a network whereby avalanche forecasts are available for the major climbing areas in our country. In the winter 1988-1989, despite sparse snow cover in early months, the number of avalanche incidents did not decline significantly; 23 hill-goers from 13 parties were carried down by avalanches. 8 were injured, with 2 fatalities. Lochnagar, one of the Cairngorm Club's 'happy hunting grounds' features very near the top of the list of recorded avalanche incidents in Scotland.

As mentioned earlier, I feel that such bodies as the Cairngorm Club can do much to help publicise the risks, and the now existent facilities which can aid climbers and skiers to avoid entering areas of risk. As outdoor pursuit enthusiasts we can also help by equipping ourselves with a knowledge of avalanche awareness and also with personal protection in the form of avalanche transceivers, snow shovels and probes.

Avalanche Reports are available during the winter season by calling:-

Mountaincall

East; 0898 500 442

West; 0898 500 441

Climbline

East Highlands; 0898 654 668

West Highlands; 0898 654 669

The Scottish Avalanche Project would like to receive details of any avalanche incidents, whether individuals are actually involved or if they simply witnessed a slide (in order to build data). Their 24hr Ansaphone number is 0479 811323.

Anyone involved in winter pursuits is well advised to read one of the many books on the subject of avalanche. One of the best, and which is devoted to Scotland, is "*A Chance In A Million*" by Barton and Wright (Blyth Wright is now co-ordinator of the Scottish Avalanche Project).

Whilst all experienced mountaineers recognise that avalanche prediction is by no means an exact science, there remains much that we can all do to protect ourselves, whilst in no way diminishing our enjoyment from trips into the Scottish hills in winter. Scotland holds the world record for survival of an avalanche burial victim - 22 hours. I doubt whether we'll ever see anyone as lucky as that again!



*John has presented a copy of his Churchill Fellowship Report 'A Study of Mountain and Ski Safety in North America 1990' to the Club library.*