

Avalanche warning triangle

- 6-8 Avalanche warning triangle
- 9 Risk management

Snow science

- 10 Metamorphism and manifestations of water
- 11 Snow in the form of precipitation
- 12 Snow deposition
- 12 Metamorphism of snow
- 14 Rounding
- 15 Faceting
- 18 Typical situations for faceting
- 20 Melt-freeze metamorphism
- 21 Changes caused by wind
- 22 Surface hoar
- 23 Development of the snowpack
- 24 Strength of the snowpack
- 25 Basal shear strength
- 26 Areas of low strength within the snowpack
- 28 Distortion of the snowpack
- 29 Creeping and gliding of the snowpack

Avalanche science

- 30 Influences affecting the snowpack
- 31 Weather influences
- 32 Precipitation/wind
- 33 Assessing snow drift
- 34 Temperature
- 35 Radiation
- 36 The effect of tracks on snowpack stability
- 37 The influence of the terrain on snowpack stability
- 38 How steep is steep?
- 39 Determining the gradient from a map

- 40 Using a slope meter to determine the gradient
- 40 Using a slope diagram to determine the gradient
- 41 Critical zones
- 42 Slope shape
- 43 Slope aspect
- 44 Slab avalanche
- 45 Loose-snow avalanche
- 46 Powder avalanche
- 47 Types of avalanches
- 48 Avalanche classification
- 50 Mechanisms of avalanche release
- 51 Natural release and artificial trigger
- 52 Additional loading and pressure distribution in the snowpack
- 53 Load-bearing capacity of the snowpack on flat and steep terrain
- 54 Avalanche information services
- 55 European Avalanche Danger Scale
- 56 Appropriate action depending on hazard level and slope angle
- 57 Avalanche bulletin
- 59 Psychological aspects
- 60 Typical mistakes

Searching

- 62 Avalanche rescue
- 63 Avoiding or surviving burial
- 64 Searching with a transceiver
- 65 Coarse search
- 66 Pinpointing
- 67 Grid method
- 68 Systematic probing
- 69 Multiple victims
- 70 3-circles method
- 71 Avalanche scenario
- 71 Resources

‘Reaching the summit is optional. Getting down is mandatory.’

Ed Viesturs

Foreword

The mountains are a huge playground for climbers, walkers, skiers and snowboarders. But the enjoyment and excitement offered come at a price. Every year people are seriously injured or killed in avalanches. As mountain users we have a responsibility to minimise the risk presented by snow and the mountains.

Snow is a unique substance. It falls in many different forms and, as part of a snowpack, changes its structure continuously. This makes it very difficult to assess the stability of a snow-covered slope.

Unfortunately, there is no crystal ball which tells us when a slope is safe or unsafe. This book aims to provide the reader with an introduction to the fundamentals of avalanche awareness. The solid, straightforward information, from professionals who spend their lives in the mountains, is presented in a form that is easy to understand and memorise, so that it can be used as an ‘on-the-hill check list’ to assess the stability of a slope and the safety of the terrain. After reading this book, you should have gained a sound, basic background knowledge of snow and avalanche science, and a basic understanding of what to do in the event of an avalanche.



The safety pages of the UK’s major ski and mountaineering clubs offer excellent further practical advice, with the accent on defensive mountaineering, and we recommend in particular the safety pages of the Ski Club of Great Britain, the Alpine Ski Club, the Eagle Ski Club, the Scottish Ski Club and the BMC (British Mountaineering Council). The Alpine Ski Club also has a useful section which goes into some detail about post-avalanche procedures. Conditions in Scotland, Canada and other areas differ greatly from the Alps, and readers heading to these areas are encouraged to consult, for example, the American literature and Scottish Ski Club website listed on page 71.

The knowledge and understanding you will have gained from reading this booklet is only half the story. In the same way that you wouldn’t want to drive on a motorway after passing only your theory test, we urge you to further your knowledge by practicing avalanche avoidance and rescue under

expert guidance, ideally on an annual basis. There really is no better way of learning some of the procedures than to practice them, for instance how to dig out a buried victim, realising in the process how fit you have to be to do this effectively! The clubs listed under ‘Useful websites’ on page 71 all offer excellent mountain safety courses.

Brian Farquharson