

# The Cartographic Journal

## The World of Mapping

ISSN: 0008-7041 (Print) 1743-2774 (Online) Journal homepage: [www.tandfonline.com/journals/ycaj20](http://www.tandfonline.com/journals/ycaj20)

## Maps for Mountaineers

Derek Maling

To cite this article: Derek Maling (1988) Maps for Mountaineers, *The Cartographic Journal*, 25:1, 29-36, DOI: [10.1179/caj.1988.25.1.29](https://doi.org/10.1179/caj.1988.25.1.29)

To link to this article: <https://doi.org/10.1179/caj.1988.25.1.29>



Published online: 18 Jul 2013.



Submit your article to this journal 



Article views: 11



View related articles 

# Maps for Mountaineers

*Derek Maling*

formerly Department of Geography, University College, Swansea

Mountaineering is a sport which covers a wide spectrum of activities ranging from hill-walking through varieties of rock and ice gymnastics. There are some people who never stray from well-defined paths, and have never had to use their hands to scramble to the summit of a peak; there are others who seldom climb on crags which are more than a short walk from a car park and never go to the summits of the hills where their favourite crags are situated. Some are to be found in the hills at every season others only walk there in high summer. Many go to more distant ranges in summer and confine their activities on British hills to winter and spring climbing. Some are experienced; others are novices.

I offer no preferences and pass no judgements, but stress that, as cartographers, we may be required to produce maps and diagrams for each of these categories of user, possibly to cover different eventualities at different seasons on the same mountain. I will draw most on my examples from British hills and, since this is a Symposium based in Glasgow, from Scottish hills. Try to forget that I know anything about cartography, but write as an erstwhile and somewhat decrepit mountaineer. It happens that this Symposium practically coincides with the fortieth anniversary of my election to membership of the Scottish Mountaineering Club. This seems a good enough excuse for me to air some prejudices.

I must confess that I have not been particularly active for more than a decade. Consequently I have little experience of using some of the newer maps and guidebooks on the ground. However I have sought the advice of my daughter, Heather, who is active in mountain rescue circles in Snowdonia and who occupies the "top job in Wales" as the press have described her stewardship of the hotel on top of Snowdon. I can therefore include some of her useful comments.

If we consider Scottish mountains in the context of surveying and mapping, we must take regard of another, and distinct subset of mountaineers who are dedicated to climbing all the *Munros*. These are the peaks higher than 3,000 feet which were originally listed by Sir Hugh Munro in the *Scottish Mountaineering Club Journal* for 1901. A revised list published in the General section of the *Scottish Mountaineering Club Guides* in 1921 contains 543 'tops' of which 276 are classed as separate mountains. The precise distinction between a mountain and a top has been a controversial subject ever since. In the latest edition of the Tables (Donaldson and Brown 1981) the totals are 517 and 276 respectively. The first person to complete the ascent of all the separate

mountains was Rev. A. E. Robertson in 1901, but the first record of anybody climbing all the tops as well did not come for another quarter century. Because of changes in survey practice, such as the change of Ordnance Datum from Dunbar to Newlyn, and, of course the Six-inch resurvey of the Highlands in recent years, the precise number of summits over 3000 feet has changed with time and there are now rather fewer tops than Munro reckoned. By the early nineteen eighties about 250 people had climbed them all and several of them have done the whole list several times. One might imagine that Munro collectors, who are evidently the mountaineering equivalent to "twitchers" in ornithology, are a fairly harmless bunch. But the art or science of Munroölogy is kept alive by fierce argument and any unsuspecting cartographer who assigns an incorrect (or even a revised) spot height to the summit of a Scottish mountain may be asking for trouble.

In mountaineering there are, I think, three different levels and requirements for map use. I describe these as the *Far View*, the *Middle View* and the *Near View* to correspond to the degree of detail with which we look at the hills and the varying significance of terrain from the broadest features of whole ranges or peaks down to the microrelief of the cliff face or small rock outcrop.

*The Far View:* Our need is for small scale maps and panoramas providing an overall view of the principal topographical features to show us where to go and what we may see. We may use a topographical document showing the disposition of the features of an area – the main valleys with the settlements, the peaks, the glaciers etc., but it is not necessarily a topographical map. I deliberately make this distinction because, for the broad view, we do not necessarily require a planimetrically accurate map of constant scale. I include under this heading a range of documents like panoramas, sketch maps and diagrams which, by virtue of their distortions, simplification or generalisation may not be suitable for purposes of navigation.

*The Middle View:* For actual navigation upon a mountain there is no substitute for a topographical map at scale 1/25,000 or 1/50,000. We need to be able to handle it in bad weather, under conditions which are far more severe than are normally encountered in the lowlands.

*The Near View:* For this we require annotated sketches and photographs of whole peaks, cliffs, or even quite

small outcrops showing the location of routes with respect to the microrelief of the features. A detailed representation of the main rock-climbing areas indicating the principal features of a crag together with an indication of the routes upon it. This is usually published in a climbing guide.

#### SOME PRACTICAL CONSIDERATIONS

I stress again that mountaineers use maps out-of-doors in bad weather; indeed it is a first-class opportunity for destructive testing. Furthermore it is a sport (possibly the only sport other than sailing) where the life of the participant may depend upon the content, accuracy and legibility of the map or chart. It means that practical considerations of physical design and paper quality are important.

"Wet strength" of paper has meaning if you try to open a large format map in a gale and rain on an exposed mountainside. This being so, the value of the synthetic papers like *Syntosil* and the *tear and water resistant material* formerly used by the Ordnance Survey for some of the Outdoor Leisure Maps is beyond dispute and its use should be obligatory for any maps like the Outdoor Leisure series specifically designed for mountain use. When we were working in the mountains of Snowdonia every spring, in the days before such innovations, I covered the flat paper copies of the 1:25,000 O.S. sheets with *mipofolie*, the adhesive backed plastic, which many will remember had the property of causing contour brown litho inks to run, but evidently did not affect any other colour. This certainly made the maps practically indestructible but they changed to the colour of a well-matured Meerschaum pipe.

Consideration of the method of folding, with emphasis upon simplicity is important. A curious piece of origami like that used for some Falk plans of towns may be very convenient for use in an urban environment, but a map will soon tear on a mountainside without the assistance of extra cuts to allow for complicated folding. The format of the map when folded is important because it is going to be slipped in or out of an anorak or rucksack pocket many times. Hence a change in folded dimensions, such as that which came with the change from One-inch to 1:50,000 series, may have unforeseen consequences. A larger map will not slip so easily in or out of a pocket leading to excessive wear along the edges of folds.

Another point is the size of the map sheet when opened. Heather's principal criticism of the Outdoor Leisure series is that they are so large that they are difficult to open conveniently. Therefore some climbers cut them into smaller, more manageable pieces.

Any inks or dyes used on the board covers of a map should also be durable. My only experience of trouble in this respect dates from a period at the end of World War II when, posted to the Northern Highlands, I had some of the 2nd War Revision One-inch sheets dissected and mounted on linen by Messrs Sifton Praed so that they would stand up to the expected use. However the rexine covers supplied by them bled so profusely that some of those maps turned blue and others red. Likewise the Scottish Mountaineering Club Guides of that era, which were all bound in boards covered with red cloth had the property of staining food and clothing as persistently as will gentian violet. Fortunately it was tasteless and evidently non-toxic.

#### THE FAR VIEW

Mountaineers are notorious for the time spent in planning future expeditions with almost obsessional care. This preoccupation has been described by C. E. Montague in his essay *When the Map is in Tune*, originally published in *The Right Place* (1924), as follows:

*The maturing map-reader, planning his holidays in the hills, will now be able to know much more besides the height at which he would stand at any point on a fell path or on an open mountain side. The map will also tell him what he would see in every direction if he were there. The sensitively winding contour curves will show him from just what point on the Watendlath-Rosthwaite track the top of Great End will come into sight. They will show him whether, from Seatoller Fell, Helvellyn will be within view, or whether the intervening Armbeth Fell is just high enough to blot the greater mountains out. A glance at the condensing or spreading lines should tell him which side of Scafell is a crag to be climbed and which is a turf slope to be walked. Before he has ever tramped up Borrowdale or Greenup Ghyll he will know how much of the valley in front will be hidden by each jutting promontory of high ground on either side . . .*

I wonder how many beginners or newcomers to the Lake District would be able to prepare themselves to be so much in tune with the terrain at first association. There is always a first time; the first visit to a country; to a different mountain range. There was a time when all of us were beginners. I argue that no matter how much time we have spent in preparation, we may be unprepared for the scale of things when we get there. The first time I visited the Lake District as a boy, I was astonished, notwithstanding the map, at the size and steepness of the slopes of Blencathra seen from the bus between Scales and Threlkeld, so much so that I got a stiff neck as a result of craning it for a better view up the mountainside which, to my untutored eyes seemed huge and unclimbable.

Confusion resulting from lack of familiarity may work in either direction. Unfamiliar hills may look enormous and impossibly remote so that we grossly underestimate what we can do in a day or an hour. Conversely, the newcomer to the Alps may be unprepared for the greater clarity of the atmosphere and because of an inability to appreciate scale through recognition of familiar things, may grossly underestimate distance and try to do far more than is practically possible. It affects both beginners and the experienced.

In 1888, the famous Swiss guide Melchior Anderegg was brought to Snowdonia by C. E. Matthews. On reaching the summit of Crib Goch and seeing the cone of Snowdon rising into the blue air, Anderegg turned on his companion, with the words: "We must go back; we cannot climb the final peak in less than five or six hours". "Oh yes", Matthews replied, "we shall be there in an hour." "That, sir", replied Anderegg, whose knowledge of Alpine distances was faultless, "is quite impossible." In five minutes over the hour they were on the top of Snowdon.

There are other difficulties which beset the novice in the preliminary search for knowledge about a place. Ignoring, for a moment, all the courses, adventure holidays and similar activities which simplify the search for knowledge about mountaineering, the experiences of

The ridge of the Black Cuillins, Skye.



the independently-minded youngster today are likely to be the same as mine 50 years or so ago when I first began to climb mountains and sought information about the Cuillin Hills. This, I had heard, was a place I ought to visit, but I knew nobody who had ever been there. Consequently I had to find out for myself, which is the lot of every beginner, who is not dragged along willy-nilly by parents or teachers. Like me, however, today's youngster would have no facility in Gaelic and therefore would not be able to make head or tail of the meaning, or pronunciation of the place names.

I had acquired a copy of the classic work by A. P. Abraham: *Rock-Climbing in Skye*. This was published in 1908 and therefore already much out of date, but I was not to know that at the time. It was useful enough for the complete novice, but I did make very heavy weather of sorting out the topography, until I hit on the idea of labelling each peak with a letter of the alphabet so that Sgurr nan Gillean = A and Gars-bheinn = Y. Anybody who attempts to reconstruct the intervening numbers will find that this system founders among the multiple summits of Bidean Druim nan Ramh and Sgurr a' Mhadaidh but it served its purpose until I could get my tongue round the other unpronouncibles shown on the map and described in Abraham's book.

The map which appeared in *Rock-Climbing in Skye* was a folded sheet which was a reduction of the County series Six-inch maps. It was therefore virtually the same map as that later printed by Bartholomews for the Scottish Mountaineering Club at 1/18,500 scale, which indicates by red lines the paths and easier scrambling routes. This map served as virtually the only map for the Cuillins until publication of the new Six-inch and 1/25,000 sheets in the early seventies.

Although the old maps were based upon the Six-inch, and were therefore the best source available, they were also notoriously unreadable. The amount of reduction of the Six-inch sheets had been sufficient for some of the line detail, such as the smaller streams on the surrounding moors to become hardly discernable and for many names to become inconveniently small. There were no contours, but plenty of rock drawing. However this had little connection with fact so that it had the character of ornament. It was not until more than ten years later that Horner at the Ordnance Survey began to take this aspect

of cartographic design seriously with production of the first sheets of the Six-inch resurvey. In short, both the map of the Cuillins in Abraham's book and the S.M.C. version of it were far too complicated for the preliminary look.

Later I acquired a copy of a pre-war edition of the Scottish Mountaineering Club Guide *Island of Skye* and therefore became the possessor of a folded map which had been prepared by Howard Priestman (as a very early venture in photogrammetry) in 1923 which was also reproduced at a scale of 3 miles to one inch. This was a map on which I could locate the peaks without difficulty and forget whether Sgurr Sgumain was Q or R according to my notation.

If this be the experience of a beginner, should we not cater specifically for such people and produce the cartographic equivalent of the Dick and Dora readers? In fact this has been done on several occasions, but I only consider one example here.

In 1970, West Col Productions produced the two sheets of their *Mountain Maps for Ramblers and Climbers* covering most of the higher mountains of Snowdonia at the scale 1/25,000. In effect this is little more than an extremely simplified presentation at this scale, with the names of the topographical features and, in particular, depiction and naming of all the crags which are important to rock climbers. This map is a useful aid to the visitor who is unfamiliar with the topography of Snowdonia who wants to know where particular peaks and crags are situated, and to see where the paths are. But I do not think that such maps ought to be used for finding the way on the hills, especially in bad weather, though obviously there is a risk that it will be used for this purpose.

#### THE MIDDLE VIEW

I have already emphasised the need to use a reliable topographical map for route-finding. Although the West Col maps of Snowdonia are of suitable scale, they are far too simplified. They are dangerously lacking in detail so that it would be very easy to choose a route which would lead into precipitous ground. A certain amount of imagination is required to bridge the blank areas between a summit ridge and the valley below. Although the producers of the map have been very careful to show all

the rock faces where people climb (for depiction of them is one of the principal purposes of the map) there are plenty of steep places and rocky places where accidents may happen, even if they are not considered to be climbing areas. These places cannot necessarily be distinguished on the map.

For example, the map makes no distinction between the south eastern slopes of Glyder Fawr which is quite steep and rocky, and the much gentler grassy slopes south of Bwlch Ciliau where the Watkin Path toils gently and circuitously to the lowest point on the rim of the Snowdon Horseshoe. The map suggests that it is possible to descend from Glyder Fawr towards Llyn Cwm-yr-Ffynnon and the main road near the Pen-yr-Gwryd Hotel anywhere on this face. In fact this side of the mountain is peppered with small outcrops and cliffs. Although these may be considered insignificant from the point of view of rock climbing by the hard men, it is no place for someone trying to get off the mountain to be wandering about in bad weather or darkness.

How can one persuade the inexperienced user of such deficiencies?

Obviously no map producer wishes to print the warning NOT TO BE USED ON THE HILLS in the margin, for no potential customer reading this injunction would consider such map to be a satisfactory purchase. Education of the user to the clear realisation that the topographical map is the definitive statement seems to be the only sensible solution. However it would be just as well if it is up-to-date and easy to read.

My criticism of the West Col maps has been based upon the original sheets which I acquired in 1970. These maps are still available; indeed sheets have been produced for some of the other major climbing localities, such as Ben Nevis, though I have not yet had an opportunity to examine copies of these. As far as Snowdonia is concerned, the same map is still available in the 1970 edition. Heather reports that she has never seen anybody using a copy of this map, but likewise reckons that a road atlas might do as well.

Without doubt the Outdoor Leisure Series provide the most suitable maps for those British hills for which they are available. Moreover they are continually improving. Reporting on the difference between the A Edition of 1977 and the B Edition of 1984, Heather reports on the much improved presentation of the narrow and precipitous ridge of Crib Goch and also the better representation of the crags on Carnedd Llewellyn. It is even more instructive to compare the detail on these sheets with that on the Provisional Edition 1/25,000 sheets compiled at a time before the Ordnance Survey took the subject of rock drawing seriously.

#### HOW MUCH DETAIL?

How much information should appear on the map; how much can be left to the guidebook?

In the preceding section I have argued for simplified presentation to help the visitor find his bearings for the novice to read the guidebook more easily. Heather reports that for winter climbing, mountaineers prefer the more simplified clarity of the 1/50,000 series maps rather than the more detailed 1/25,000 scale. Here I argue the contrary because of the need to have information, especially that needed in an emergency, ready to hand. One reason why I advocate putting the maximum

amount of information upon a minimum number of pieces of paper is explained by the following anecdote. One night in 1943 I navigated a bomber from Cornwall to North Africa. For reasons of operational security I only received the bulk of the information concerning the flight less than an hour before taking off. I had been issued with two or three hours' worth of reading matter, most of which concerned procedures to be carried out in an emergency. In order to do any navigation at all, much of it had to remain unread. Nevertheless, a great deal of the information could have been plotted on the half dozen or so maps and charts required for that flight where it would have been easily accessible should any kind of emergency have arisen.

Similarly for maps of mountains, I suppose that the short answer is that anything which refers to safety in the hills ought to go on the map, for it is too much to assume that users have, in fact, a guidebook in their rucksacks, or that the weather is fit for them to stop and consult it. But what is this additional information and how does it differ from detail which is already depicted at the medium topographical scales? Surely it is a matter of map-reading skill that is needed, not a lot of additional detail? I do not think that in the majority of cases any additional detail is required; it is the way in which it is given adequate emphasis that matters. I choose just one example of what is needed; the choice of the safe route from the summit of Ben Nevis, down the Carn Mor Dearg arête. It is a well known example of a dangerous place where a small amount of additional emphasis can make the 1/25,000 or 1/50,000 scale maps more informative and safer to use.

The Carn Mor Dearg arête is one of the easiest routes off the mountain into Coire Leas and thence to the Allt a' Mhuilinn glen *provided the party strikes the right route from the summit and reaches this ridge at the correct place*. It is the finding of this place which is the most difficult part of the descent. The recommended procedure was described on page 26 of the first edition of the S.M.C. Guide to Ben Nevis (1936) as follows:

*To find the ridge in mist, steer 130° (true) from the Observatory for 400 yards, descending somewhat, then turn due east. The Arête gradually curves round to the left until its direction is true north to the summit of Carn Mor Dearg (4012 feet) . . . When skirting the top of the cliffs of Ben Nevis as described above, in misty weather in winter and spring, it is well to keep a sharp look out for the gullies which cut deeply into the plateau and which may be heavily corniced. This applies especially to Tower Gully and Gardyloo Gully.*

However these important instructions are contained within a general topographical description of the location of the climbing routes and are given no special emphasis. Indeed, it requires some fairly diligent searching to find it in the comfort of an armchair even when it is known that the information is somewhere in the book. To try and find it in a gale on the summit plateau, in mist and fading light would be more difficult.

Because of the notoriety of the place, it received further mention in the *Scottish Mountaineering Club Journal* (No 147, 1956) where a vertical aerial photograph of the summit plateau was reproduced with the comments:

*This photograph shows that the obvious crest line of the crags near the Observatory runs towards the N.E. Buttress and not*

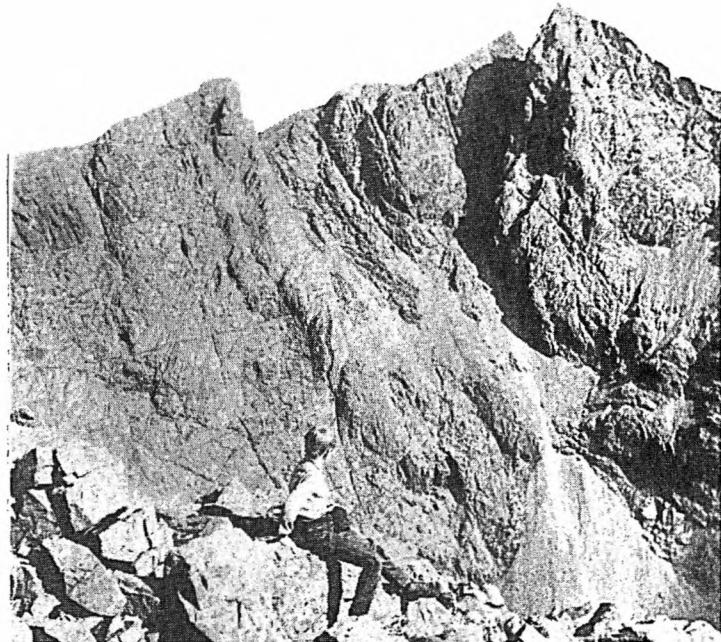
towards the Carn Mor Dearg Arête. If climbers searching for the arête find themselves mistakenly approaching the summit of the N.E. Buttress they should return to the Observatory and follow the line of approach to the arête recommended in the climber's 'Guide to Ben Nevis', as the traverse . . . is over sloping ground which is known to be dangerous, especially under winter conditions . . .

It is most unlikely that a visitor to Ben Nevis would have a copy of that particular volume of the S.M.C.J. in his pocket, although it is more likely that someone in the party has a copy of (one hopes a later edition) of the S.M.C. guide with them. Nevertheless it is still going to take time to find the right directions in the guide. This important information ought to be shown on maps of the mountain, either as a prominent marginal note, or even better, a clear representation of the recommended route having special meaning and greater emphasis than are the usual symbols for a footpath.

Since those days at least two privately produced maps of Ben Nevis deserve consideration. I have yet to see that produced by West Col Productions; the second is an interesting document produced by a former Sheffield geography student, Alan McKenzie, in 1972. It bears the logo of Nevisport, the shop in Fort William which specialises in mountaineering equipment, so that it may presumably be described as having been published by them. This is at a scale of about 1/15,000, covering the ground between the aluminium factory and distillery at Inverlochy to Steall, near the head of Glen Nevis. The rock drawing is crude and diagrammatic but is well supplied with names relating to the topography known to climbers: Northeast Buttress, Observatory Ridge, Point Five Gully, Little Brenva Face, so that orientation ought to be reasonably easy. The route from the summit to the approaches to the Carn Mor Dearg Arête is shown as a 'poorly defined path', without further comment. Indeed the advice printed on the reverse of the map (this being a good example of how to make good use of both sides of the paper) tends to discourage visitors from using either this or the Waterslide route to the summit from Glen Nevis.

Having argued the case for such emphasis as well as the need for adequate information to be shown on any map to be used on the hills, I offer two anecdotes which draw several obvious morals.

The first happened to my wife, long before I met her, in the days when she, too, was attempting to discover mountaineering without much advice from more experienced climbers and had met a geography student from Cambridge, who took her on an expedition to the central Highlands. Part of his plan involved buying a large stock of supplies in Kinlochleven and then walking to Loch Ossian Youth Hostel. In the innocence of youth she accepted at face value his evaluation that 'it wasn't far; only a matter of six or seven miles'. However the young man in question was not accustomed to the idea that Bartholomew's Half-inch maps were not the same scale as the One-inch. The route from Kinlochleven leads, first, up to the Blackwater Reservoir, along its north shore and thence by a stalkers' path across the hills to Lochtreighead, making a circuit round some outlying hills of Mamore Forest. The last four miles or so is along the railway track to Corrour Station. It is fully 15 miles over some very rough country and is quite a long and testing day unloaded; more of a trial carrying a sack of



Sgurr Alasdair, The Black Cuillins, Skye

potatoes on top of a full rucksack. She turned down his next suggestion, which was to walk over to Glen Roy to look at the Parallel Roads.

The moral has something to do with being able to read a map.

The second happened in the early seventies, when we used to run our field survey courses in Snowdonia.

On this particular occasion we had been locating some minor control points on the Glyders before the arrival of the students and, as often happened, we were accompanied by various younger members of our families. While we were completing work near the summit of Glyder Fawr the mist came down. We therefore set off towards the Devil's Kitchen path intending to descend into Cwm Idwal and pick up the Land Rover at Ogwen Cottage. At some unspecified interval we emerged from the mist to find ourselves descending towards Llanberis Pass on the other side of the mountain. The only thing to do was to retrace our route almost to the summit of Glyder Fawr and take the right direction from there. Eventually on reaching Ogwen, the children still had energy enough to run ahead, compound my embarrassment and advertise our late return with gleeful announcement that 'Daddy got lost and we went down the wrong side'.

I was aware that my rucksack contained:

The Six-inch maps of the area

The 1/25,000 maps of the area

The One-inch maps of the area

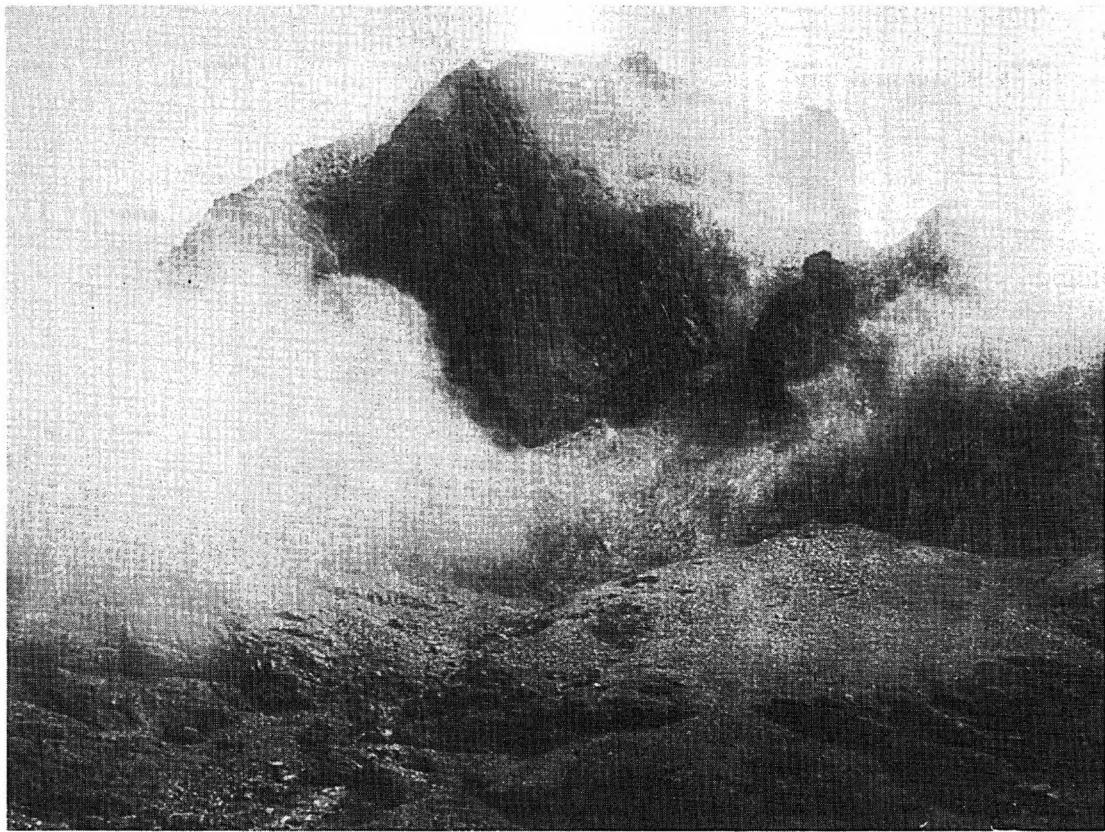
A complete set of the 1/10,000 scale aerial photographs and a pocket stereoscope

but I hadn't bothered to look at any of them.

No matter how good or bad the sources may be, they can only be of use if you actually consult them.

#### THE NEAR VIEW

With the possible exception of some of the longer approaches to summits in the Cuillins, a planimetric map of a mountain face is not a suitable way to show the climber where the various routes are situated or where they go on a crag. For one thing, there may be many routes starting from the same place, or only separated from one another horizontally by a few feet or yards; secondly the routes may cross and recross one another higher on the crag; third, different parts of a climb, or *pitches* may differ in difficulty so that it may not be safe



Sgurr Sgumain,  
The Black Cuillins,  
Skye.

for a party with little experience, or rewarding for a strong team to attempt a route without knowing about its category of difficulty or the correct route to follow. The usual method of depicting the information is through a suitably annotated photograph or sketch published in a climbing guide.

Various guides are available for walkers which show parts of the routes in a variety of different methods, usually by enlarged sketch maps for certain sections. Special mention should be made of the charming guidebooks prepared by A. Wainwright which began to appear in 1955, which have deservedly become best sellers, so much so that the eastern fells of the Lake District is now sometimes known as the 'Wainwright Country'. Since the preparation of each page of each guidebook has involved a massive amount of drawing and calligraphy, these are rather specialised productions. Moreover they are only intended for walkers and do not constitute climbing guides, but taking the appropriate volume it may be possible to dispense with virtually all other aids, for Wainwright will get you to your destination, show you a lot of what there is to be seen and keep you reasonably far from danger.

Photographs of cliffs, showing annotated linework to show the routes have been reproduced as halftones in climbing guides, at least since the nineteen twenties. However it is quite difficult to obtain wholly satisfactory photographs of some cliffs, because of the lack of any commanding viewpoint close enough to show the detailed topography as well as the overall view. Moreover many of the most important crags face northwards and it is difficult to obtain a photograph which is not flat and lacking in shadow variation. This means that it may be difficult to pick out important features of a crag. The well known example of this occurred in the summer of 1899 when Professor Norman Collie first suspected the presence of the great tower known as a 'Chioc'h on Sron na Chiche in the Cuillins from the shadows cast on the cliff by the late evening sun. Even when we know where

to look, it is quite difficult to pick out the outline on photographs of the cliff taken around midday.

As a result, many guidebook editors have preferred to use outline sketches of the salient topographical features, concentrating more upon the principal features, such as the Central Gully or the West Buttress, and plotting the positions of the climbs with reference to these. Often these have been prepared with little artistic or even draughting skill, but there is one important exception where this work has been done by a fine artist who was a climber as well. These are the illustrations made by W. Heaton Cooper for the climbing guides published by the Fell and Rock Climbing Club of the English Lake District from 1935 onwards. Heaton Cooper (1968) has described in some detail how he approached the problem and indicates the amount of time which was spent in visiting each of the cliffs, viewing them from different vantage points at different times of day and seasons in order to obtain a composite image of how each crag or outcrop ought to appear to provide adequate clarity. It was not just a matter of him setting up his easel in a convenient place and drawing the result. Moreover the artist's approach to generalisation of information corresponds closely to the cartographer's. He writes:

*In order to interpret a three dimensional object, whether it be a human figure or a mountain, with any real understanding, the artist needs to feel its volume, structure and proportions, as it were from the inside, not just give a general impression of the main mass with details added superficially, such as usually shows in a drawing that has been made entirely from a photograph. When he is drawing 'free' the artist unconsciously selects, emphasises and eliminates according to what he feels about the subject. I was surprised to discover, when making the guide drawings, how much of this unconscious selection had always been inherent in my paintings and drawings of mountains and rocks, and how greatly I had to direct my outlook, for these guides, away from the realm of feeling into that of cold correct*

*facts. Yet the practice of this kind of drawing has, over the years, given me more understanding of the structure of mountains and the desire to learn more of how they were made.*

These drawings were only supplemented by a few broken lines and letters to indicate the positions of routes. However there is no reason why such a graphic should not be provided with additional symbols to indicate the nature of each pitch, the degree of difficulty, the nature of any artificial aids inserted into the rock or considered necessary to accomplish the climb and so on. The figure illustrates some of those which were proposed in the nineteen sixties for international use by U.I.I.A. and was described by Burke (1969).

The desirability of showing this amount of detail in a climbing guide is open to debate. The pitch-by-pitch description of climbs which was introduced in the Fell and Rock guides for the Lake District and the Climbers' Club guides for Snowdonia used to be frowned upon as spoon-feeding by the Scottish Mountaineering Club, who preferred to give only a general description of a climb and statement of its grade of difficulty. But that controversy was more than 30 years ago. With the increase in the use of artificial aids, the recovery of which means all the difference between success and failure on some climbs, such detailed descriptions of each pitch may be essential. In fact the utility of such a system is probably of greatest value to the mere handful of climbers who are capable of tackling these extremely severe routes. Lesser mortals can usually manage with much simpler descriptions of their easier routes for usually there are more handholds, footholds and scope for minor variations in the choice of route.

*. . . but, alas, these Ordnance Survey men are not to be trusted . . .*

Tom Weir (1948)

This outburst resulted from discovering that a crag shown on the map comprised a mixture of grass and rotten rock, which seems a rather extreme reaction. But it is part of the same tradition of blaming the *closet cartographer*, as Freshfield described him.

*In these matters I have had many an arduous struggle with draftsmen of the highest technical skill, but inadequate out-of-door experience. It is cruel that a poor man should be set to delineate snow mountains who has never seen one, and when 'a week at lovely Lucerne' can be had for five guineas, it is inexcusable.*

Freshfield (1904)

Clearly Freshfield would have strongly approved of the current experiment by the Society of running specialised activity meetings in caving and climbing. When can we go to Lucerne?

It has long been recognised that the County Series Six-inch maps of the Highlands were wholly inadequate from the point of view of relief representation. This naturally affected the quality of the One-inch map too. It was the poor depiction of the terrain which was one of the major factors leading to the decision to undertake the Six-inch resurvey after the war. The new Six-inch or 1/10,000 maps produced during the last quarter century are not only contoured, but also contain the new designs of rock-drawing produced under the supervision of R. A. S. Horner. The techniques were described by him to a very early meeting of the Society in Southampton in 1965, but sadly this paper was never published in the Journal. Since that time, members of the Scottish Mountaineering Club assisted the O.S. by suggesting which cliff features should receive special emphasis so that the present rock drawing, for example on the Outdoor Leisure maps, is the combination of practical knowledge of the mountains as well as skill in sketching by scribing. Therefore there is no longer much justification for criticism on that account. However the process of mud slinging inevitably resulted in some of it sticking; hence the criticism of the small scale Ordnance Survey maps for other reasons.

During the nineteen fifties and sixties the state of the One-inch map, in particular the lack of up-to-date information on it, led to some really extraordinary editorial comments in the Scottish Mountaineering Club Journal which demonstrated ignorance of the ways of surveying and mapping; and even the paranoid claim that maps remained unrevised for dark reasons concerned with national security.

In order to place these utterances in their proper context we must remember that:

The old Six-inch sheets were, as we have seen, quite inadequate for showing mountain terrain.

Between the middle nineteen forties and late nineteen sixties some huge civil engineering works transformed many glens because the water levels of existing lochs were raised and new reservoirs were created for hydro-electric power. Consequently some roads and many stalkers' paths in the upper parts of glens were submerged and the alignments of some routes through the mountains were profoundly changed.

Because of the normal O.S. policy about the revision of the small scale maps of mountain areas, new versions of

#### THE CONFLICT BETWEEN MOUNTAINEERS AND MAP MAKERS: THE SCOTTISH EXAMPLE

Ever since mountaineering began in Britain about a century ago there has been fairly persistent sniping at the Ordnance Survey by mountaineers and walkers.

When, in 1904, the celebrated mountain explorer, D. W. Freshfield, was elected President of what we now call Section E of the British Association for the Advancement of Science, he chose, as the subject for his address: *On Mountains and Mankind*. Here he revealed that:

*At home when I was young, it was dangerous to hint at any defects in our ordnance sheets, for surveyors in this country are a somewhat sensitive class. Times have altered, and they are no longer averse from receiving hints and even help from unofficial quarters.*

Freshfield (1904)

which shows that nothing ever changes.

Much of the criticism has been concerned with the quality of the rock drawing, each writer gleefully noting when he had detected a major error of interpretation. Not even Montague could resist the chance of a sideways swipe at the O.S. when he wrote:

*Only a few years ago our one-inch Ordnance map of Scarfell and its buttresses made the craggy north face of Great End look as if you could march a division of troops up or down it, big guns and all.*

The Right Place, 1924

Sometimes it even had the makings of a personal vendetta

the One-inch maps of the area appeared less frequently than for the lowland parts of Britain. Indeed it was not until the initiation of the second series 1:50,000 maps that really up-to-date maps of parts of the Highlands at last appeared.

For mountaineers this had two consequences:

The revised heights of many of the peaks, and the 'tops' appearing on new maps did not correspond to those originally listed by Munro. There were changes in the status of both peaks and tops as some were relegated and others were promoted into the list rather like league football clubs at the end of the season. The Scottish Mountaineering Club, being the custodians of Munro's original stone tablets found that they were unable to publish a complete and definitive list of revised heights. Because there was already a sizeable following of Munro collectors who wanted to know if there were any more peaks to be climbed, there was a lot of critical comment in succeeding issues of the S.M.C.J. through the late fifties and early sixties about the tardiness of the Ordnance Survey in making these data available. It ultimately needed the diplomacy of two different Directors General of the Ordnance Survey to attempt to smooth ruffled feathers. On reading some of this material again after a lapse of twenty years I think that some correspondents to the S.M.C.J. had missed the important point that they ought to be examining the newly printed Six-inch maps for this information, not grumbling about the fact that the information had not filtered through to the One-inch maps. In any case, nobody knew what were the heights of the tops which were not actually O.S. control points until the photogrammetric work had been done and the contours had been plotted for each Six-inch sheet prepared. Consequently nobody could provide a complete list of the heights of every peak and its subsidiaries until the last Six-inch sheet of the Highlands had been plotted.

The second complaint was even more important. Because the topographical changes which had not been incorporated into the One-inch maps might mislead users, this might constitute a hazard. Because the changes were slow to appear on the One-inch maps, whereas Bartholomews had incorporated the revised information fairly quickly into the Half-inch maps, the Editor of the S.M.C.J. went so far as to recommend the use of the Half-inch in preference to the One-inch. I wonder how many sack of potatoes were abandoned on Rannoch Moor in consequence. In a letter to D.G.O.S., dated 15th October 1965, the Editor of the Scottish Mountaineering Club Journal spelled out the reasons for criticism with some clarity:

*You do not mention the unfortunate practice (surely it is not deliberate!) of not always marking the new hydro-electric dams and lochs, on revisions made after these were completed (cf. S.M.C. Journal, 1962, xxvii, 288). This has done more than anything to lower public confidence here in the Ordnance Survey, especially when competing commercial mapmakers clearly indicate them. The public complaint is not only due to dislike of inaccuracy or over-zealous security, but because lost or exhausted novices, trusting implicitly in their map, and suddenly finding through the mist unexpected, impassable barriers, may collapse psychologically and so be in very great danger.*

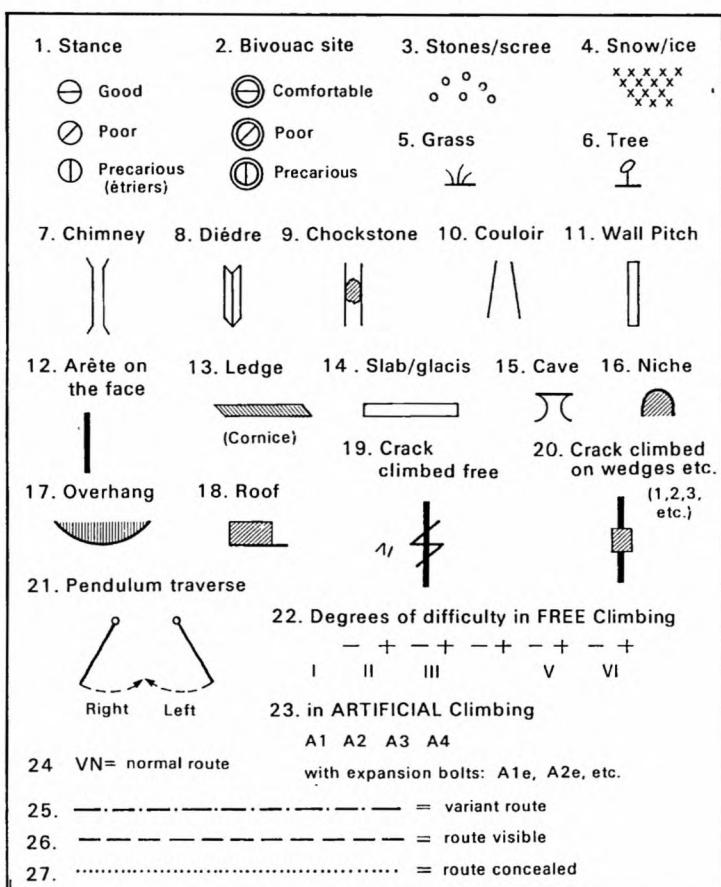
*We should welcome an assurance that all visible*

*physical details will be depicted as soon as technically practicable . . .*

S.M.C. Journ. 28,157,1966

It needed a list of the changes and the dates when they had been added to particular O.S. sheets to sort that one out. This had been prepared by the late Arthur Walmsley-White, then doing his stretch at the O.S. as a Colonel, and indicates that seven out of the ten major changes which had been listed in S.M.C.J., 153, 1962, had already been added to the One-inch map. (A few years earlier he and Michael Cobb, who were presumably both Majors at the time, put in the new control for the Cuillins, so they, too, had a number of Munros under their belts).

Since those days wiser counsels have prevailed. The period of physical change is over, the maps are reasonably up-to-date and, of course vastly improved. Therefore the episode is closed and what I have described is history. It is only necessary to read the extremely well-informed and pertinent review of the new 1/50,000 series by Adam Watson in S.M.C.J. 167, 1976, to appreciate the change of heart. But the episode shows how much heat may be generated by misunderstanding the map making processes and using the wrong sources.



Symbols for mountaineers' maps

#### REFERENCES

- Burke, M. (1969). U.I.I.A. Grades and Symbols. *Mountain*, 3, 1969, 31.
- Donaldson, J. C. and Brown, H. M. (Eds) (1981). *Munro's Tables of the 3,000 feet Mountains of Scotland and Other Tables of Lesser Heights*. Edinburgh, Scottish Mountaineering Club Trust.
- Freshfield, D. W. (1904). On Mountains and Mankind. *Geogr. J.*, 24, 443-460.
- Heaton Cooper, W. (1968). On Guide Drawings. *The Fell and Rock Journal* xxi, 60, 6-10.
- Montague, C. E. (1924): *The Right Place*, London, Chatto and Windus, 225 pp.
- Weir, T. (1948). A Camp on Rum. *The Scottish Mountaineering Club Journal*, 24, 139, 9-14.