But these are quibbles. No other book so entertainingly presents the basic physiology and medical problems of high altitude to the interested climber, and the book deserves its enormous popularity. I look forward to the error-free apotheosis which will presumably be called *Going Highest*.

JOHN B. WEST, M.D.

Hypothermia and Cold Injury. Evan L. Lloyd. Apen Systems, Rockville, Maryland. 1986. 397 pages. 19 figures and tables.

Although this is an excellent review of virtually all that is known today about hypothermia, the title is misleading: only seven pages are given to frostbite. Here we have a great deal of information about mechanisms of heat conservation and loss, and of the effects of cold on every organ system and function, as well as an excellent discussion of fact and fancy in rewarming. Water deaths are usually attributed to drowning, the author points out, rather than to cold. Hypothermia is more common than suspected: though few hard data can be found (and none in this book) estimates range up to 20,000 deaths per year, mostly in the elderly, caused by cold. For the physician and physiologist particularly interested in cold, the bibliography of 1200 authors will be invaluable, but the book is not as helpful to the layman as is Wilkerson, Bangs and Hayward's small book. I recommend it strongly for cold specialists but less warmly for others.

CHARLES S. HOUSTON, M.D.

The Outdoor Athlete: Total Training for Outdoor Performance. Steve Ilg. Cordillera Press, Evergreen, Colorado, 1987. 265 pages, 95 black and white photographs, 7 drawings, appendix, glossary, bibliography. $12.95 (paper).

There is nothing new about the idea of training for climbing. Both Hans Kraus and Fritz Wiessner developed the ability to do one-arm pullups in the 1930s. Emilio Comici had the body of a gymnast, and it is unlikely that he acquired such a physique just from climbing. Hermann Buhl mentions that some of his early rock-climbing successes were attributable to well-trained hands, and Reinhold Messner describes traversing exercises that he did until exhaustion.

In the late fifties and early sixties, John Gill developed some astonishing gymnastic strengths, including one-arm one finger pullups and one-arm front levers. Gill established a standard of sheer physical strength that has rarely been equalled and has never been surpassed, although other climbers have developed higher levels of endurance. Since then, an increasing number of climbers have sought, in idiosyncratic and often unsystematic ways, to improve their performance through training.

In the eighties, continental climber have redefined the sport. Adventure and self-reliance in the face of unknown problems have been replaced by the single-minded pursuit of pure difficulty. The rock has become an elaborate piece of apparatus, the climb a routine that is rehearsed and perfected in sections until a "red point" performance is achieved. These new climbs demand a tremendous level of strength and endurance, and everyone who is serious about climbing now trains for it.

The results of all this training and hard climbing have not been encouraging. Many of the best climbers have had their careers cut short by athletic injuries, and sensible enthusiasts are beginning to look for solid information before embarking on a training regimen that could be detrimental to their primary goals.

Although there are some very extensive accounts in foreign languages about how to train for climbing, there is a dearth of information in English. Most of the available literature in English is about body-building where the goal is to develop extreme muscle mass. Even the sports-oriented material is directed at the kinds of absolute strength needed by football players and field-event competitors. Little has been written about the relative strength requirements of climbers and gymnasts.

Into this vacuum steps Steve Ilg with his book *The Outdoor Athlete*, published by the Cordillera Press. Ilg, a professional trainer and self-styled "exercise guru" from Boulder, Colorado, describes training programs for outdoor activities on land, snow, and water. His climbing prescriptions are the centerpiece of the book. They are also the most interesting to AAC members and are the only ones I feel competent to review. Others will have to decide whether he has wisdom to offer kayakers, skiers and skateboarders.

Ideally, a book on training should not only provide specific workouts, but it should also convey enough information about exercise principles to allow the reader to create personal programs, or at least sensibly modify the given routines. Ilg supplies the workouts, but when it comes to the elucidation of principles, *The Outdoor Athlete* must be judged a failure. The problem is twofold: First, Ilg is more interested in prescribing and motivating rather than educating. This may make sense for the clientele he gets as a personal trainer, but the audience he gets as an author is more likely to want to know why they should do what he says. Second, Ilg's writing and organizational abilities are utterly inadequate to the task of clear communication. Many paragraphs wander aimlessly, having only a tenuous connection to the section headings that precede them.

Ilg insists on investing every aspect of training with profound spiritual consequences. I suppose this is something gurus are obliged to do, but in places the text is almost suffocated by the weight of new-age commercials for self-actualization through workouts.

Although Ilg makes much of a lean physique, his language suffers from cellulite. Grotesque paragraphs, their meaning obscured by cascading rolls of verbal flab, lumber shamelessly through the book.

Even those hardy souls with the forbearance to plow through the writing will encounter organizational and conceptual obstacles to understanding. For example, the description of each training motion contains a section mysteriously labelled "Aspects", which lists the Latin names of the muscles affected by the motion being described. Nowhere in the book, however, is there any kind of diagram illustrating the position of these muscles in the body. Another example is the barely functional index.

Blame for a book this badly produced falls squarely with Cordillera Press. Ilg is a professional trainer, not a writer, and the editorial staff at Cordillera Press has done him a great disservice in allowing his manuscript to appear in this form.

It is particularly unfortunate that the style and organization are so incoherent, because some useful content may be overlooked. *The Outdoor Athlete* has the most varied and best thought-out weight-training routines I have ever seen. Ilg's workouts integrate most of the current knowledge about strength training: weekly variation in the exercises for enhanced stimulation and reduced chance of overuse syndromes, division of the year into distinct training periods with different exercises and levels of resistance for each period, balance of motions to prevent the kind of joint stress that results from the differential development of opposing muscle groups, the inclusion of some power work in addition to the usual strength and endurance exercises, the integration of cardiovascular and flexibility training, and the allowance for suitable rest periods.

Having said this, I have to admit to reservations, ones that are shared by virtually every climber I know who has looked at the book. It is evident that Ilg, though he climbs, is first and foremost a lifter and has allowed the demands of his primary interest to color his prescriptions for other sports. For example, in one of his transitional phase routines for climbers, he recommends a once-a-month strength day, which involves doing bench presses, squats, and full deadlifts with maximum poundages. These exercises are as dangerous as anything the adherents of climbing specificity promote, and they are of such marginal use for technical climbers as to be superfluous. If you happen to find yourself pinned under a 250 pound boulder, you will wish you had developed maximal bench pressing ability, but otherwise you are risking shoulder injuries for very minimal climbing benefit. An example of a recommended exercise that is not irrelevant but is poorly adapted to climbing is dips. Repetition mantles on a flat surface and muscle-ups on a bar are no more dangerous and far more productive for the time and effort expended. If you must do dips, performing them with the palms facing outward will enhance their usefulness considerably, but Ilg doesn't mention this variation.

In addition to the inclusion of exercises of tangential utility, there are some serious omissions. The most glaring is the lack of hand strength and endurance work. All the upper body strength in the world is going to be useless to a climber who can't hold on long enough to use it. There is no exercise topic more important to climbers than safe and effective methods of developing hand

strength and endurance, and Ilg is silent on this crucial issue. After all his very sensible talk about balanced and progressive training, Ilg simply abandons ship when it comes to hand exercise, recommending some buildering on days off from the gym. It is going to be pretty difficult for modern climbers to take seriously an exercise program that neglects to train the most important single part of the climber's anatomy.

The second kind of omission has already been alluded to above. Ilg prefers weights and machines to bodyweight exercises. The result is that many of the neural pathways appropriate for climbing will not be adequately trained, and the coordination of muscles will be lacking. I know a number of climbers who have emerged from a winter of weight-training stronger than ever, but who find that they feel awkward and strained when they begin to climb. They have been training their bodies to be rigid centers around which weights are lifted and balanced, while climbing demands that the body be continually shifted to adapt to the position of the extremities and the forces they exert. For these climbers weight training has tuned an inappropriate set of neuromuscular responses, producing the experience of clumsiness and stress.

I am not suggesting that all traditional weight exercises are of little use to climbers. Some lifts, like the overhead press, are essential for strengthening muscles that oppose the pulling motions that are common in climbing. Some kinds of cable machine exercises, for example tricep pressdowns, are already quite specific to climbing. But there is a host of climbing-specific bodyweight exercises that is absent from Ilg's account. This is really the subject for another book, but a few examples will illustrate the kinds of exercise that Ilg either ignores or slights:

Rope Climbing: Rope climbing is probably the best single upper body exercise you can do for climbing. A rope is far better than a Bachar ladder or a peg board. You aren't limited to some fixed spacing in your reaches, so you have the opportunity to work on maximum extension when you are fresh and shorten your stride progressively as you tire. A long stride requires both pulling and pressing motions, thereby working and coordinating a full range of muscles. Climbing a rope for speed is one of the best power exercises for climbing. Ilg emphasizes the importance of power training in his introduction, but includes no upper body power work in his exercise routines. (Incidentally, Ilg credits Steve Wunsch with the introduction of dynamic power techniques to climbing. Pierre Allain and scores of other Fontainbleau boulderers predate Wunsch by as much as 40 years. In this country, John Gill, Dick Williams, and John Stannard also made extensive use of dynamic techniques long before Wunsch first employed them.)

Uneven grip pullups. An alternative for those who can't find a rope to climb, or who are too weak to climb a rope initially. One hand on the bar, one hand lower on a towel or piece of webbing looped over the bar. Both hands must pull; don't flip the lower elbow up and mantle. Keep working the hands further apart as you gain strength.

High Pullups: Another explosive power exercise in which you attempt to accelerate upwards as high as possible. The back is kept straight, and you don't

lean over the bar as you pass it. Ultimately, you should be able to slap the bar to your thighs.

Muscle-Ups: A pullup followed by a press to straight-armed support, done slowly. A full-range motion that is much better than doing pullups and dips separately.

Front Levers: A still-ring move. The body is held parallel to the ground, facing up, arms straight. Most weight lifters can't come close to doing this, whereas most climbers can. It must be a useful climbing strength if so many climbers develop it naturally. It seems to be related to body control on overhanging walls. A particularly good combination exercise is to do repetiton front lever muscle-ups. Hold a front lever for three seconds, pull to a muscle up, drop back down to a front lever, and repeat.

One-leg Deep Knee Bends: An alternative to squats that involves more balance and body control. Best done by walking a bar or pipe and alternating one-leg deep knee bends.

Routines: These exercises can be combined to stress the body in a way more analogous to what is experienced climbing. Here is an advanced example that needs a high bar: One arm pull up on the right hand, one arm pull up on the left hand, muscle up, foot to bar, pivot, one leg deep knee bend up and down, regrasp bar, drop to front lever, hold three seconds, drop to hang, and repeat sequence, using other foot for the knee bend.

Ilg considers this kind of training "overly specific" and warns about the injuries that will result. Indeed, his position was supported by Dr. Mark Robinson's superb talk at the 1987 AAC meeting in Las Vegas. Personally, after more than twenty-five years of regular "overly specific" training, I am unconvinced. The kinds of injuries that climbers get from specific training can also be attributed to extreme overzealousness and a failure to do exercises that balance muscle groups. We don't know whether their injuries are the result of the type of training they do or the approach they take to training. There is nothing inherently safe about conventional weight-training activities, and a rational, progressive, climbing-specific program does not have to be any more dangerous. The key to effective body weight training is not to restrict yourself to body weight! The secret is to use counterweights or an elastic band system to effectively reduce body weight in a controllable, modifiable fashion.

There are two topics that Ilg doesn't omit but which are very incompletely presented. The first is flexibility training. Ilg pays lip service to it and includes an incomplete and idiosyncratic set of movements that looks as if it were appended as an afterthought because the pictures were available. These photos are accompanied by ecstatic and incoherent prose but almost no useful advice. Get *Stretching* by Bob Anderson, a book that Ilg recommends but which doesn't appear in the bibliography.

The second sketchily presented topic is nutrition. In addition to an inadequate chapter, there is an appendix on Ilg's personal eating habits. Ilg himself suggests you ignore this appendix, a judgement with which I heartily concur.

Finally, there is a psychological problem with all training that Ilg does not

address. The athlete in training strives for momentary muscular failure, focusing all his efforts on exhausting his strength. The climber, at every moment, wants to do exactly the opposite, namely, to conserve strength. Long periods of training can subtly promote very bad energy management habits, and the climber needs to think about this quite consciously as he resumes climbing in the spring.

It is clear by now that *The Outdoor Athlete* is a seriously flawed book. As a source of general information and advice, it cannot begin to compare to the paradigmatic *Sports Illustrated Strength Training* by John Garhammer. Nonetheless, the actual workout descriptions in *The Outdoor Athlete* are unique and deserve the thoughtful attention of anyone planning to train for climbing. If you are new to training, Ilg's workouts are probably the best way to start. Buy the books by Anderson, Garhammer, and Ilg. Read Garhammer so you know what's going on. Skip the first sixty pages of Ilg's book, and follow his program for a year, adding full-body flexibility sessions from Anderson. Then start to branch out to more specific routines.

The primary goal of training for climbing is to increase performance, as Kraus, Wiessner, Comici, Buhl, Messner, and Gill realized years ago. A secondary goal, one understood only recently, is to prevent injury. Some very good books on training in general exist, but we still await a definitive treatment aimed specifically at the unique demands of climbing.

RICHARD GOLDSTONE

El Everest, Historia de una conquista. Conrad Blanch and Joan Massons. Ediciones Península, Barcelona. 1986. 236 pages, 174 color photographs.

This lovely, large-format book reports on the Spanish Catalan expeditions to Mount Everest, an unsuccessful attempt in 1983 and the climb to the summit on August 30, 1985. Both expeditions climbed during the monsoon period via the North Col and the Northeast Ridge. The text tells also of previous Catalan expeditions, of preparations, of China and more especially Tibet as well as the climbing activities.

The English-speaking reader will be immediately attracted to the book by the beautifully reproduced color photographs. Many are full page, a number are double-paged, measuring 11½ by 18 inches, and a few are even larger fold-outs. They illustrate this route on Everest extremely well. One which caught my eye in particular was a shot of the Second Step. There was one strange omission; in the diagram of routes on Everest there was no indication of the East-Face route climbed by Americans in 1983. This is certainly a book which will appeal to collectors of beautiful mountain books.

ADAMS CARTER