

# BAFFLED ABOUT BAFFLES?

All about sleeping bag construction...

by Bud Cox

## A discussion of sleeping bag structure—loft, baffling, bag shape, zippers, hoods.

A good sleeping bag is an essential ingredient to a good camping experience. Without a good bag you may be in for restless nights wishing you had spent a little more to get a better bag from the start.

The main function of the sleeping bag is to retain body heat by keeping it from being lost at a faster rate than it is produced. This is achieved by deadening the air's movement by trapping it within the bag's structure. Deadened air space is the best insulator. Thus, when the body is warm it can rest during sleep. When the body gets cold it has to work to keep you warm. Shivering is the body's natural means of generating enough warmth to protect itself from the dangers of becoming too cold.

To make a wise choice in a sleeping bag, one ought to know about its structure. A bag's ability to keep the sleeper warm depends on two things: on its fill and on its structural design. This article will discuss the components of the structure: loft, baffling, bag shape, zippers, hoods.

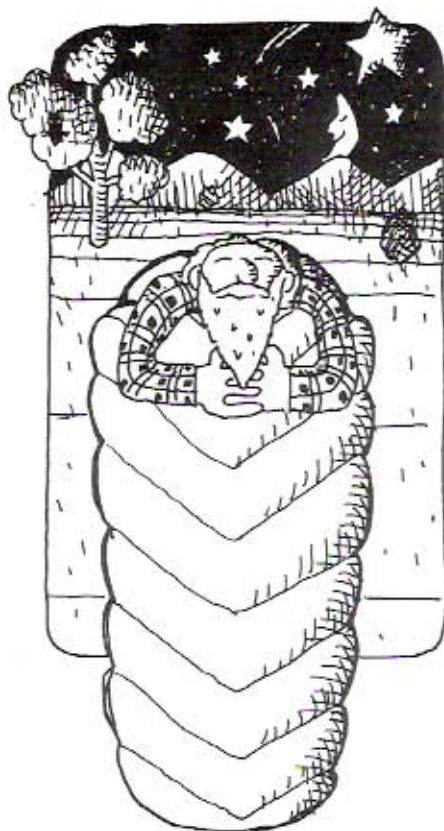
### Loft.

This refers to the bag's height after it is fluffed. But, only one-half of the total loft of a bag keeps you warm; the other half is compressed under you. There is a definite relationship between warmth and loft. The more loft the bag has, the warmer it is. However, it is not practical to draw an exact relationship between loft and specific temperatures. A manufacturer's claim that a sleeping bag having 1½ inches of loft will take the sleeper down to 40° is not accurate, except in ideal conditions. Some variables that affect the amount of loft needed to insulate a sleeper are:

- temperature*
- wind velocity*—winds decrease the insulating effectiveness by circulating cold air across the surface of the bag and drawing the heat from the top layer of the insulation.
- humidity*—higher humidity makes

insulators less effective.

- shelter*—serves to keep the warmth of the sleeping bag surface from escaping too fast.
- metabolism*—a higher metabolism keeps you warmer, metabolism being affected by your physical and psychological condition, and whether or not you have eaten just before going to bed.
- ground insulation*—a pad between the sleeping bag and the ground is essential and is the only insulation between you and the ground.
- clothing*—worn inside the sleeping bag will keep you warmer.
- structural design of the sleeping*



*bag*—a well designed bag will keep you warmer than a poorly designed bag with the same amount of loft.

### Shell.

This is the fabric of the bag and is comprised of an inner shell and an outer shell. The insulating layer of down is contained between these two shells. Shells are made from many fabrics—cotton, taffeta, nylon. But 1.9 oz. ripstop nylon is the most popular. All of the bags we examined were made of ripstop nylon except the Ski Hut bag which was made of Tenaya nylon. Three manufacturers—Moor & Mountain, Blacks and R.E.I.—use 1.5 oz. ripstop, which is lighter but not as strong as 1.9 oz. Comfy uses 1.8 oz. ripstop.

Ripstop nylon has the qualities of being light-weight; down-proof (to control down leakage); resistant to fading and abrasion; permeable (to allow body moisture to escape); slightly water repellent; and smooth enough that it does not cling to the body during sleep.

Fully waterproof shells are impractical. Bags must be able to "breathe" so that body moisture can escape. Waterproofing causes this moisture to condense on the inside of the shell, making the sleeper wet.

### Baffles.

For a sleeping bag to keep the sleeper's body warm evenly, the bag's construction must keep the down distributed evenly around the body. It must prevent thin or cold spots from developing in the insulation. Bags must, thus, prevent the down from shifting. The simplest method of doing this is to quilt the bag, sewing through the outer and inner shells with many seams to keep the down in place. But the sewn-through design is the least effective since there is no down at the seams, and therefore cold spots result. The only advantage of the sewn-through construction is its cheapness.

The better method of keeping the down from shifting is a series of baffles sewn between the shells. A baffle is simply a wall of fabric that prevents the

down from passing from one section to another. Nylon is usually used for baffling material in the better bags because of its strength and its ability to prevent down leakage from one tube to another.

Marquisette (mosquito netting) also is used in some bags with some success, although it is not as tough as nylon and has a tendency to leak down.

All of the bags we examined had baffles.

There are four basic baffle patterns used in bags: 1) box wall or square, 2) slant wall or parallelogram, 3) V-tube or overlapping V's, and 4) double-quit or laminated.

The box construction has a tendency to allow the down to fall away from the baffles, so that, in effect, you end up with not much more than a sewn-through pattern, resulting in cold spots. Ascenté, Bugaboo, Mountaineering Products, Gerry and Moor & Mountain employ this method of construction.

The *slant-wall construction*—a series of offset baffles—is very popular because of its success in limiting down movement while at the same time allowing a bag to expand to its full lofting capacity. Twelve manufacturers out of the nineteen bags we examined used this method.

The *overlapping V construction* requires much more baffling than the slant wall. As a result it is heavier and more expensive. However, it is a very efficient pattern for eliminating down shift. Alpine Designs, Blacks and Comfy use the V-tube design. This construction also limits a bag's loft to the height of its triangular construction.

The *laminated pattern* is actually two sewn-through layers stitched together so they overlap to eliminate cold spots. Because this construction requires four layers of fabric it tends to make the bags heavy. None of the bags in our report had this design.

Some sleeping bags have their baffles constructed in a zigzag pattern referred to as chevron construction. Although this is very effective in keeping down in place, it puts an added stress on the baffles at the apex of the chevron and it can tear, especially when the bag is pulled from its stuff sack. Ski Hut uses the chevron design.

Most bags have a sidewall baffle (channel block), which is an additional baffle between the shells extending the entire length of the center seam. This

prevents down shifting from the top to the bottom of the bag. The sidewall baffle is located on the side opposite the zipper. Some bags like Pinnacle, Adventure 16, and R.E.I.'s McKinley 2 do not have sidewall baffles. On these bags you can push the down from the bottom to the top of the bag. In cold weather this could be an advantage.

#### Shell Cut.

Nine bags we examined incorporated a differential cut in their structural design. Among them were Alpine Designs and North Face. A bag that has been differentially cut has an inner shell that is smaller than the outer shell. Theoretically, the differential cut keeps the thickness of the insulation uniform throughout the bag, preventing cold spots that are otherwise caused by the body's pressing the inner and outer shells together. The smaller inner shell stays close to the body, thereby eliminating air pockets and thus space that would be heated wastefully. Differential cut is not as important in spacious semi-mummy bags as it is in mummy bags. However, some of the best manufacturers, such as Holubar, purposely avoid using the differential cut. They maintain that the sleeper will be warmer if the inner shell of the sleeping bag is the same size as the outer shell and therefore drapes around the sleeper's body.

#### Foot area.

Many of the better bags have a special elliptical or square-shaped construction in the foot area that keeps the outer and inner shells apart and gives added warmth to the feet.

#### Shapes.

There are four basic sleeping bag shapes: 1) mummy, 2) semi-mummy, 3) barrel, and 4) rectangular. All four shapes represent various compromises of warmth, weight and roominess. The mummy bag is by far

the warmest and lightest shape. However, many people have difficulty adjusting to the confining, form-fitting, mummy-shape bag which turns with you as you turn in your sleep. People who toss a lot in their sleep find the semi-mummy more suitable. The semi-mummy is a compromise between the spaciousness of a rectangular bag and the heat retaining ability of the mummy bag. Mummy bags are warmer because there is less air in them for the sleeper's body warmth to heat up. The larger bags give you more room to move around in and are therefore more comfortable but not as warm.

All the bags we examined were mummy bags except the Moor & Mountain bag, which is a modified barrel bag.

A barrel bag is essentially mummy in shape, except it has no hood and is wider at the foot. A rectangular bag is open at the top and square-cut at the foot. It is not generally considered a backpacking bag.

#### Hoods.

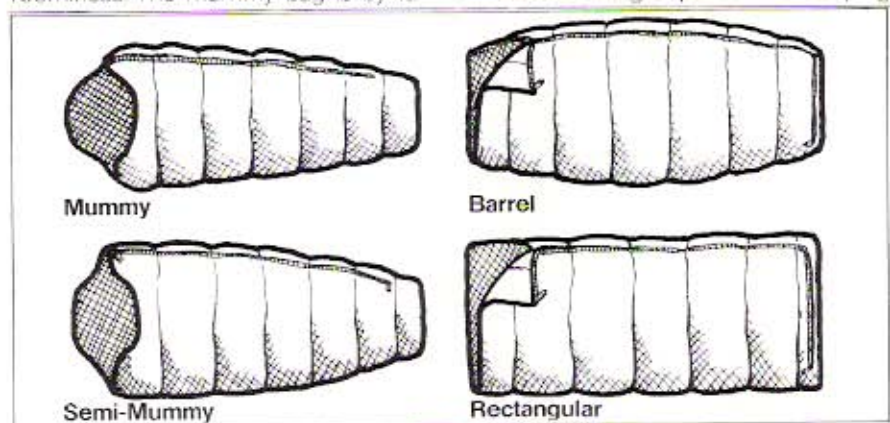
Most better bags have built-in hoods. A cord draws the hood around your face and locks in place with a cordlock or fixlock. It is essential to be able to work the hood closure easily when you are inside the bag. Fourteen bags of the nineteen we examined received an excellent rating on this point.

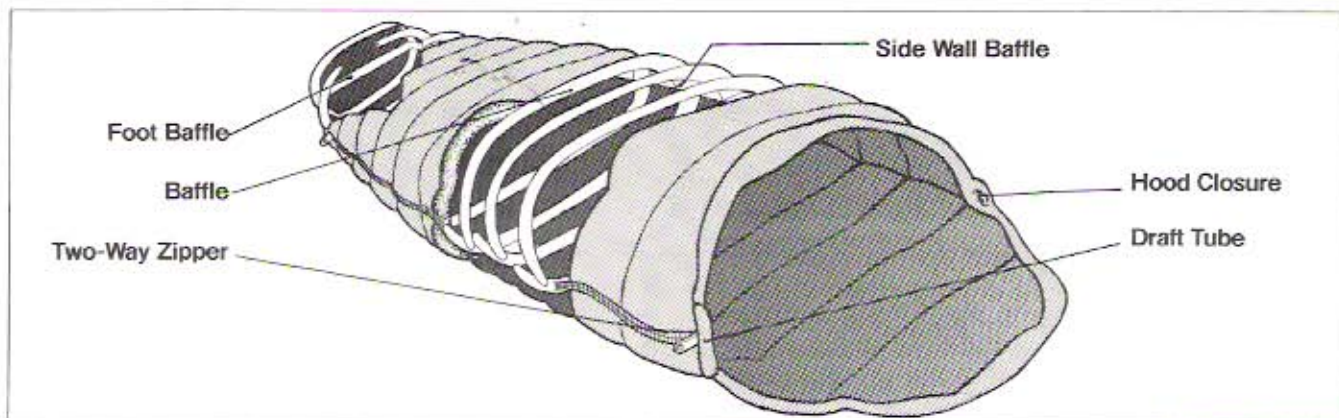
The Moor & Mountain bag has a detachable hood which offers some added versatility to the bag—such as permitting the bag to be used in warmer weather without the hood and its added weight and permitting the hood to be detached so that it can be used separately as a hat.

However, we believe a hooded bag is warmer than one with a detachable hood. And a bag without any hood at all allows cold drafts to enter.

#### Zippers.

Another integral part of the sleeping





bag design is the zipper. Metal zippers are no longer used in good bags. Nylon zippers do not freeze and are lighter in weight than metal zippers. All the bags we examined had nylon zippers.

The better bags have double sliding zippers which can be zipped from top or bottom. This permits better bag ventilation, and thereby more effective temperature control. All the bags but three—Blacks, Moor & Mountain and R.E.I.—had double sliding zippers.

Most better bags have zippers that enable two bags to be zipped together for double occupancy. When buying bags for double-up use it is important to check to be sure you have a right- and a left-side bag.

The zippers of good bags are covered with a draft tube—that is, a baffle filled with down that keeps the body from coming up against the cold zipper and prevents cold air leaking in through the zipper.

In our opinion, a draft tube should not be sewn through at the point where it attaches to the zipper, for this cuts down its insulating capacity. Six of the bags we examined were inadequate on this point.

One company, Class 5, has two draft tubes: one sewn on the top of the zipper and the other on the bottom.

Many bags have Velcro fasteners which keep the top of the zipper from opening. We liked this better than the metal snap fasteners because they are cold when they come in contact with your face during sleep.

Instead of zipping down the side like most bags, the Adventure 16 and the R.E.I. bags zip down the top; the Adventure 16 full length and the R.E.I. only half-way down the bag. We believe the weight of the top zipper depresses the down enough to make the bag a bit less warm than side-zip models.

#### **Stitching.**

The stitching of the bag should be uniform and the stitches close together (at least ten per inch). We were unhappy with the stitching on two bags we examined: Blacks and Moor & Mountain.

The thread generally used in better bags is cotton with nylon core. The nylon gives it strength while the cotton expands when it gets wet, filling the thread holes—and thus makes it more water-resistant.

#### **Accessories.**

These include the stuff bag, tie tabs, sleeping bag liner, and sleeping bag cover.

A stuff bag (into which one stuffs the sleeping bag) is made of nylon that has been treated with a waterproof coating.

Tabs that have been sewn into the foot of the bag to tie it together after you have rolled the bag are called tie tabs. Blacks, Comfy, Moor & Mountain, Mountain Products and R.E.I. have tie tabs. While these tabs are handy for hanging a bag to air it out, this is a feature that you can well do without. Tie tabs get one into the habit of rolling instead of stuffing a bag. And repeated rolling will permanently compress the

down, which will ultimately cause loss of insulating capacity.

Many people make an effort to keep the inside of their sleeping bags clean by using sleeping bag liners. Holubar fits his bag with the best liner attachments we have seen. Although the liner does help keep the bag clean and will make your bag warmer, it can be a real nuisance at night when you get knotted up in it. It is also added weight. Some people prefer to keep their bags clean by sleeping in a sweatsuit. That, of course, is also added weight to carry, but more comfortable.

A sleeping bag cover is a baglike device that engulfs the sleeping bag. Such a cover protects the outside of the bag from dirt and abrasion while adding warmth to the bag. However, most people find the extra weight and inconvenience hardly worth it. If you are careful with your bag, you will be amazed at how clean you can keep it.

Now that you know what to look for in choosing a sleeping bag, you might mistakenly think that you are ready to buy the bag. But, before you buy, we would suggest that you borrow or rent the bag you are considering and give it a field test.

Also, keep in mind that the bag you want is probably not the bag with the most down or the highest cost. Rather, it is the bag that is most compatible with your needs and that has the most favorable combination of three factors: maximum compressibility, minimum weight, and optimum warmth. 🐾

# Much More About Sleeping Bags In Section II (Page 64).