

The Art of Cross-Country Skiing and Waxing

By Julie Lewis and
Michelle Bernades



Sven, Michelle, and Julie resting a moment from

cross-country skiing.

Michelle Bernades, an exchange student from Kauai, and Julie Lewis, a novice cross-country skier also, wanted to learn about the exploits, adventures, and how to's involved with cross-country skiing.

When Michelle and I (Julie) were first introduced to Sven Wiik, we found out many interesting facts. Sven received his first pair of skis at an early age and has been a steady and devoted ambassador for ski touring ever since.

"I was born in the little town in the Northern part of Sweden, called Solleftea. I think it was part of growing up, living in Sweden, snow country like Steamboat Springs, that skiing was a way of life. Every child, by the time they could start walking were ready to start skiing. I can not really remember when I started skiing and how it came about, but I remember we had long winters and snows, we had to do something.

"When I grew up, skiing was not only a recreational past time, it was almost a necessity, like learning how to swim, for the importance of survival. We skied to the grocery store and other places. Skiing was a good means of transportation, and along it we had competition and fun on skis. Lots of people did use it for transportation, roads were not the very best and sometimes in the wintertime they would have to go for weeks before roads got plowed."

Sven gave us a brief profile of his life and from that we learned that he was a ski trooper with the Swedish Army during World War II, and a member of the Swedish Gymnastic Demonstration Team at the 1948 London Olympics.

When we asked him about coming to Steamboat, he remarked, "I came to Steamboat eight years ago, when we first built and started Scandinavian Lodge. Before I came here I was associated with Western State College in Gunnison, Colorado, for nineteen years and was assistant professor of health and physical education as well as the head ski coach."

Sven being an expert and instructor, we wondered what type of things he would teach in his lessons.

"In taking a lesson, what the instructor will start out with is learning how to glide on skis, getting the balance. Then he would go through what we call 'technique exercises.' I would give you four or five exercises to help develop the part of the body that is directly involved with skiing. Balance is important, then leg strength, and then to have flexibility in the shoulders.

The Three basic techniques are:

1. Diagonal Technique-Walking and dragging or sliding the feet, rather than lifting them, arms moving in the same fashion.

2. Double- Poling-Propelling yourself with the use of both ski poles at the same time. Push off each leg for acceleration and a little speed.

3. Diagonal Rest Technique-Use your arms on every other time of the complete cycle. Rest your arms and upper body every other cycle.

(This technique is easier explained on the snow.)

These are the techniques taught in the first lesson."

"The second lesson involves learning how to climb a hill, come down a hill and make a turn. We teach a complete course in cross-country techniques. By the time you receive all the information of the second lesson, you can ski by yourself and work on ski touring.

You work and think about the different things you're supposed to do, it's rather simple, but technique is important. The best advice I can give you is to take one lesson; any beginner who starts out without a lesson will likely develop bad habits and use twice as much energy. So a lesson will make the art of ski touring enjoyable."

While talking with Sven, Michelle and I wondered about the historic Telemark turn.

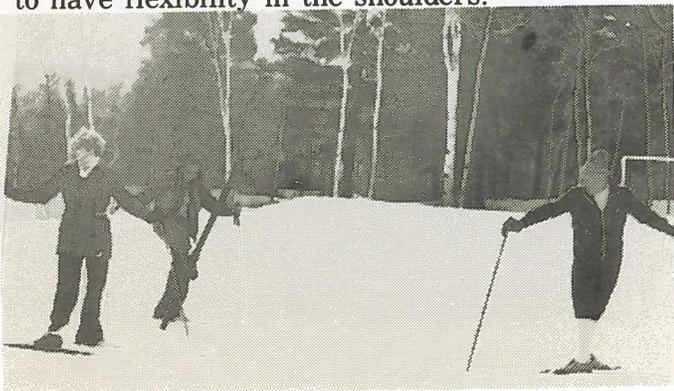
"It is a historic turn, probably one of the first turns made on skis. You may remember or have seen on a old pair of skis, anywhere from eight to ten feet long; but because of the model of equipment today, you are handicapped. So the long ski that enables skiers to make beautiful Telemark turns. It is also a balance turn. You're standing in a normal position skiing down the hill, then when you are ready to turn you put all your weight on the forward ski and make a thrust in the direction you're going, leading with the front ski with your knee bent.

"This is like the one ski of the snowmobile, you put one ski forward and turn that ski in the direction you're going. This was the best type of turn that could be done on the old type of skis."

"We can say ski touring is the foundation to all skiing. Anyone who wishes to learn how to ski and learn how to do it safely can do best on a pair of touring skis. They learn how to get balance, how to ski on flat surfaces, how to climb and come down a hill. If someone does fall on these skis, the chances of getting hurt are very remote, because the boots, bindings, and skis allow so much freedom of movement."

When Sven finished explaining this, Michelle asked him about stopping when you come to the bottom of the hill.

Learning a step-turn



“First, you stop by turning like you do in downhill skiing. We say you can do everything the same on touring skis. By turning you can control your speed. For example, if you come into soft snow, you do the same as in slope skiing. Also you can do a step turn, if the snow is a little heavier to step into. Just pick up one ski and turn the other. On a pair of touring skis, if you go downhill and you’re going too fast, you can slow down best by leaving a track and skiing out into the substance of the snow.”

“Then when you learn how to ski tour and use these skis, it is not a very long step to slope skiing. So we can say, this is a good way to start learning how to ski and getting into good condition. You don’t need to go to lifts or big mountains, but you can do it in your backyard when there is a couple inches of snow. Someone from Minneapolis, for example, can do ski touring anytime in the park and get in good condition. Then when they come to Steamboat for a winter vacation, they can enjoy slope skiing so much more because they are in good shape.”

Julie learning the art of cross-country skiing,



“It is truly a very enjoyably sport!”

“One word of caution, never get over confident when it comes to venturing into the wilderness. Even though statistically there are very few accidents in ski touring, the danger in ski touring is getting lost. Watch out for that!”

Talking about learning how to cross-country ski, we wondered about the best type of snow conditions.

“Dry snow is the best, because all waxes on skis seem to do so much better in dry snow. It also is much easier to wax your skis for dry snow. I would say today with the modern equipment of synthetic bottoms, the wood bottoms are not going to be around, to speak of in future years. You will probably not even see the wooden bottom of skis, because they are all synthetic and the waxes have become so good and so simple. You can still enjoy the sport in wet snow when it’s wet, but I think you would enjoy it more when it’s a little cold and dry.”

Julie then asked Sven when they started using the wooden skis, “I have a replica in the lodge which says, ‘this ski was found in the Northern part of Sweden 2000 years before Christ.’ That is a replica of a ski. So skiing has a long history, even so competitive skiing does not have that long of a history.”

Equipment

Michelle and I were interested in equipment so Sven explained, “The length of the ski is very important. Raise your hand straight over your head so that the tip of the ski is even with your wrist. Your weight, height, and ability, this will determine who gets the shorter or longer ski. A heavy set person would use a little longer ski, but even more so a little wider ski for floating ability. Technically a good skier can have a full length ski. An absolute beginner and an older person are wise to have a shorter ski.”



Boots are a factor in cross-country skiing, "I prefer to use a lighter higher touring boot which gives lateral support; it's very comfortable and warm. A lighter skier might want to ski faster and the lower cut boot with less lateral support. There are two kinds of poles, one made from bamboo and one made from metal.

"Bamboo poles also can be Tonkit. Tonkit is nothing but a high grade bamboo, that got its name because bamboo was found in the area of the Gulf of Tonkin, next to Sherman and Vietnam. Metal poles serve the same purpose and are three times stronger. In a couple of years you may not find or buy bamboo poles or tonkin poles for two reasons: metal poles are better and the price isn't much different, and bamboo is getting scarce. Poles should fit between the shoulders and armpit, but a racer may use a shorter pole."



We then wondered why poles for cross-country ski touring were longer. "We go through eras like fads sometimes, someone gets the notion that poles should be longer, just like long and short skirts. Sooner or later they hit a happy medium. You remember, in slope skiing, the long skis were 200-210 centimeter skis. Now they are shorter. So I would say now for ski touring, ski poles are just right.

"Alpine equipment has one purpose, to come downhill and enjoy turning. Therefore the skis are wider and have steel edges for edge control. Boots are sturdy and completely fixed to the skis so you can not lift the heels. They are high with support, built not to walk in. Ski poles are

shorter than touring cross-country poles, whether they are light or heavy.

"Weight becomes very important to ski touring equipment. You're to propel yourself through the woods with your own power to bring you from one place to another, as your own powers are going to take you up the hill. They take you across meadows, fields and forests. Therefore weight of equipment has to be rather light. For particular reasons we divide ski touring into four categories: 1) The ski mountaineer. He is the closest to the alpine skier of them all. He is the person who climbs mountains to enjoy the trip down and the one who ventures into the forest to stay out in the snow overnight. His skis resemble an Alpine slope ski, never the less he tries to get lighter equipment. 2) The tour skier. 3) The light tour skier. 4) The cross-country racer.



The tour skier is the person who likes to venture into the mountains and explore or to go out to his summer cabin which he may have never seen in the winter time. Another may break trails when out skiing with light but a wide ski and a sturdy boot, also light. Light ski poles with big baskets are good, for they don't sink down too deeply into the snow. This person likes to be out there all alone.

"The light ski-tourer does most of his skiing in an all ready made tracks, and likes to be out where other people are, to follow their tracks. He also likes to ski faster than the tour skier.

The racer has the narrowest ski of all. They use narrow skis, because skiing is done in a ready made ski pole track, and they use a bigger ski pole basket. Everything the racer does on skis has speed, to be the fastest.

So therefore cross-country skiing is quite different from alpine skiing.

Sven told Michelle and I that we would be classified as light tour skiers because we're beginners. "I would outfit you accordingly, because of your ability and weight. I would not recommend buying a non-wax ski. I would suggest you to buy skis with waxable bottoms, for you would do your own waxing. Bindings are important to ski touring, "There are two types of bindings:

1. A toe-binding. This fastens the toe of the ski boot, only in the front of the shoe.

2. Cable binding. This binding goes around the heel of boot.

A light tour skier would use a toe binding. The boot is a very light racing type. I would recommend a little heavier boot with a higher top on it for more lateral support. Clothing has two basic principles.

Clothing

1. It should allow complete freedom of movement, because you are quite active in this sport. Stretch pants, for example, are not a good garment for ski touring, because they are tight. Knicker type pants and loose clothing is good.

2. The layer principle. It is better to wear many layers of clothing. You want to develop the ability to control the temperatures of your body, just like you control the temperature in a room with a thermostat. When it get's too warm, shed one layer of clothing, a thin layer when you shed it. When it get's cold, add a layer of clothes.

For example a quilted parake will heat you up quickly. A wind breaker is very important and a wool sweater."

Fran Jenkins, a high school coach and cross-country instructor advised Michelle and I on clothing also. She recommended a turtleneck, sweater, windshirt and a down vest for your upper layer.

Sven remarked, "When I go out for one afternoon or a whole day or even overnight I have five layers on my upper body and three on my lower body.

Trail Skiing

Inform yourself about the trail you're going on.

Prepare yourself for ski touring by asking people about terrain and knowing about the kind of trail it is, and try to know yourself how far you can go. A classified trail can have a already made trail or a marked trail. Trails are classified into two categories:

1. A difficult course, technically.
2. A distance course.

You should know how many uphill and downhill and difficult turns there are in that course and how long the trail is. I can handle about five miles if I have two hours to go out, and if I can get in a nice easy intermediate trail, I can get in just about 10 kilometers.

If you venture out, know the territory. In winter time you should have a survival and repair kit; a first aid kit should be ready to take care of anything that might go wrong on a tour. You should be able to take care of a problem in less than five minutes. If you tour in all ready made tracks like around this lodge, (Scandanavian Lodge) you don't need anything. The trails are marked and well prepared, and there are lots of people on them all the time. If you happen to break a ski or hurt yourself, here you are not far from the road, or from anything. But if you venture to Rabbit Ears Pass, I would say be prepared.

Practice maybe first on the golf course area, a nice area to ski and learn on. Then when you get a little braver you might want to venture out to the Hot Springs or to Strawberry Park and then when you feel your are getting better go out on Rabbit Ears Pass some nice day. There is lots of beautiful ski terrain around here.

Waxing

There are all kinds of waxes for different snow conditions. The average tour skier would need only two or three kinds of wax. The racer would probably use more waxes for the different snow conditions. Waxing is quite complicated and takes experience and time to learn. Waxing can be very simple also, especially now with the synthetic bottoms. Before when we had wooden skis, waxing accomplished two things: gliding on skis and getting a good hold or grip, so you don't slip back when you climb a hill. Synthetic bottoms glide on all snow, so you never need to wax. You want to be able to climb the hill without slipping back on wood skis. So you need wax.

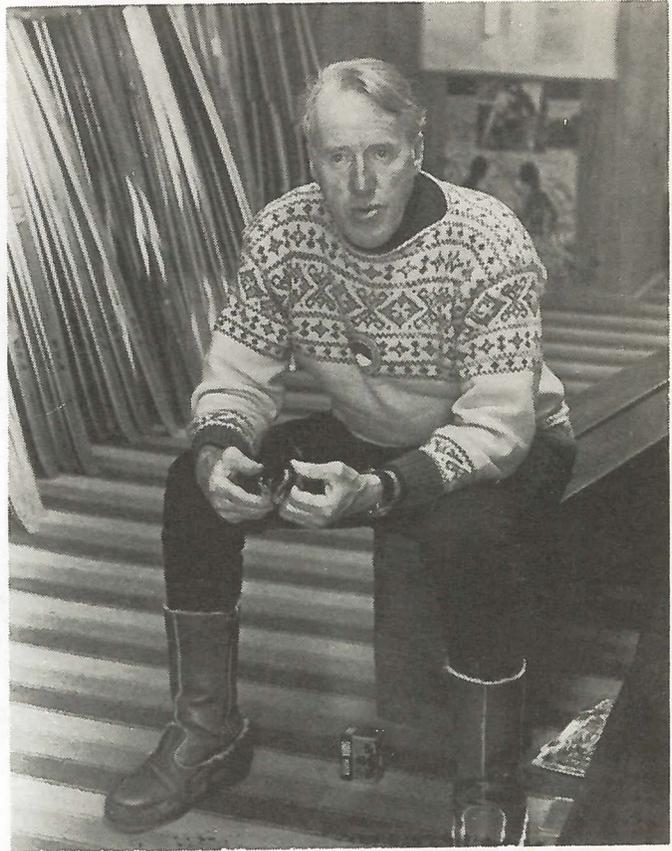
Types of Snow

There are two typed of snow, wet or dry. Swix wax cans have wax, one for wet and one for dry. That is pretty much all a tour skier needs, in his backpack. Now they are working on the no wax bottoms, called 'non-wax skis.' They have the fish scales on the market that glide forward & won't slip back, but they are still in the experimental stage, someday they may come up with something: A person who skis on no-wax skis work harder than a person who wears a waxed pair, without the fish scales.

Getting hurt by frostbite is a common injury when people are getting lost. Broken legs and injuries in slope skiing are more common than in ski touring. I don't think I personally have had any bad experiences, but I have heard of many and been in many rescue parties looking for people that were lost. We have had to go out and look for people who have gone down with avalanches.

I have been, temporarily misplaced or lost for two or three hours, but I always managed to find my way back. I have been in complete white-outs, (snow storm-where you can't see anything), and I never got to the point where I felt scared or thought I was lost, or could not find my way. So personally I have not been in that kind of real situation. 'I have been looked after by God.'

"Beautiful experiences, any tour is beautiful. I have had some fantastic tours in the most miserable types of weather, whether it was blue sky, sunshine or a snow storm or blizzard. Each type of weather has its own equal beauty, and all weather for ski touring is good weather.



Sven, author of the booklet,
"Cross-country Skiing Training
and Racing"

and co-author of the book,



The Regnery Guide
to
Ski Touring".

Al Wilkinson shows Julie and Michelle



the proper technique of pine tar waxing.

After talking to Sven, Julie and I wondered why and how to wax skis. Al Wilkinson has been living in Steamboat for almost four years and has been working at Mountaincraft, a mountaineering ski shop, for seven years. He's been cross-country skiing for the past seven years.

"Alpine skiing is getting over crowded. In Vermont the economic aspect of cross-country skiing was very appealing and inexpensive. Fiberglass is going to have a very strong influence in the future of cross-country skiing. The direction that the industry is moving now, people want fiber glass now more than wood, mainly from the point of view that they're stronger. Wood skis are more likely to break. In the Rocky Mountains the skiing is very challenging. Downhill skiing with fiberglass bottoms stay off the snow a little more in the middle which makes the ski faster. Many of the fiber glass skis are turning as well as wood skis. People just don't want to take that risk on a pair of wood skis that might break, when price wise they pay just about the same for wood skis as they do for fiber glass.

"There are two varieties of skis: ones that you wax and skis that you don't wax. Many skiers believe that fiber glass skis glide better and climb well with properly waxed skis rather than the no wax skis. People who are not experienced with waxing and have done a lot of touring jump right into fiber glass skis, sometimes to find that they are more difficult to wax, because of the camber (the curve of the skis' center) than a wood ski.

The center section is stiffer so the tails and the tips of the skis stay off the snow when you're going downhill. Camber makes the ski faster."

Waxing of skis can be a simple process, however Julie and I thought the process should be explained: "There's certain types of wax for certain snow conditions. Whether you're waxing a wooden ski or a fiberglass, you apply wax the same way, just using different waxes. Fiberglass skis quite often requires a softer wax or a kicker in order to get grip going up a hill. (The kicker portion of the ski consists of about one foot directly underneath the boot and binding.) When

you climb uphill in cross-country skiing you want the center of the ski down, so you have grip under your foot. When that grip action takes place you create friction like pushing the ski uphill yet it can still function going downhill."

Waxes are color-coded for different snow conditions and air temperature. "Swix has a two wax system for wet and dry snow. There are five or six colors depending on snow conditions and air temperature, and even then you may have to change colors. So measure the air temperature, and get a softer wax if necessary. As the air temperature goes up, and the snow gets wet it thaws, so you may need to use a softer wax. It's getting so the waxes are very different.

Various brands of waxes are used and some of the better brands are Rex, Swix and Bratlie. It is important that a person chooses one brand and learns how to use that brand. Cold, new snow waxes come in a can while old snow waxes come in a toothpaste type tube and resembles a mixture of thick honey.



"Wax is not as mysterious as some people think. Put a layer or two on to see if it works going uphill. With the proper amount of wax you can get a good glide while still able to climb. If you put too much wax on you may get grip uphill but the ski might be slow going down. So it's really a matter of putting the right amount of the right wax on so that you get the perfect ski.

Most of the waxing is not difficult. Green wax or hard wax goes on like a crayon. After putting a little on, take a cork, either styrofoam or natural cork and smooth the wax. It should be smooth, almost like glass. If it doesn't grip enough put a little more wax on."

Julie and I then wondered what 'enough' wax was, "Well, it's usually a matter of trial and error. You have a pretty good idea of what you're going to need that day so you put that wax on the skis. Ski for 100 or 200 yards making sure that the wax is getting a chance to work. If it doesn't you may have to stop and put on a little more of the same wax or perhaps a softer wax.

Pine tar waxing

Wax the full length of the ski with a hard wax in order to protect the pine tar bottom. A kicker may be applied for extra grip.

"Wood absorbs moisture unless that is a protective coat. On the bottom of the ski we would paint pine tar, heated with a torch. Spread the pine tar over the ski very lightly. One very light coat is enough to get into the wood. The heat opens the pores and lets the pine tar soak in.

The excess is wiped off. The ski then is protected against moisture. Where a ski isn't pine tarred the wax comes right off, and then you are skiing on a bare ski.



Hot waxing

"On a fiber glass ski seal the bottom with hot wax. You may use paraffin or downhill wax. This may be applied with a regular iron (an old one, no hotter than 140 degrees).

The wax is pressed to the iron and the running wax is wiggled down the surface. Then with the iron flat against the ski bottom spread the wax out. Rub the finish till it has a glossy, glasslike appearance. It is very important that the iron is never allowed to scorch the ski.

"In the dry snow in January and February, it is a common practice to take the hardest of the can wax, special green and coat the entire length of the ski as a protector wax, otherwise known as a base wax. If it gets warmer, up to 20 degrees you might need some dark green or blue or whatever the chart suggests.

Temperature waxing chart

	Snow type and characteristics	Temperature Range		Wax and Brand
		C	F	
Falling and New Snow	Extremely Dry (new powder)	8 ↓	18 ↓	Green (thin)
	Very Dry (blows easily)	5 ↓	21 ↓	Green (heavier kicker)
	Dry (blows with difficulty)	0 to 5	23 to 32	Blue
	Transition (clumps in hand)	-1 to +1	30 to 34	Violet
	Mushy (rolling snowballs dig in)	0 to +3	32 to 37	Klistervoks ●
	Wet (hand soaking wet when squeezing)	+2 to +6	35 to 42	Red Klister ●
	Settled Snow	Very Dry (small crystals blow)	-12 ↓	10 ↓
Dry (small crystals will form snowballs)		-1 to -10	14 to 30	Blue
Transition (lg. crystals, corn)		-1 to +1	30 to 34	Purple Klister
Mushy (hand wet after squeezing)		0 to +3	32 to 37	Red Klister
Wet (slushy)		+2 to +6	35 to 42	Red Klister
● ●	Dry, Hard Crust Ice, etc.	5 ↓	21 ↓	Blue Klister ●
	Crusty, but softer to Mushy and Wet	-6 to +1	22 to 34	Violet Klister
	Wet Slush	0 to +6	32 to 42	Yellow Klister

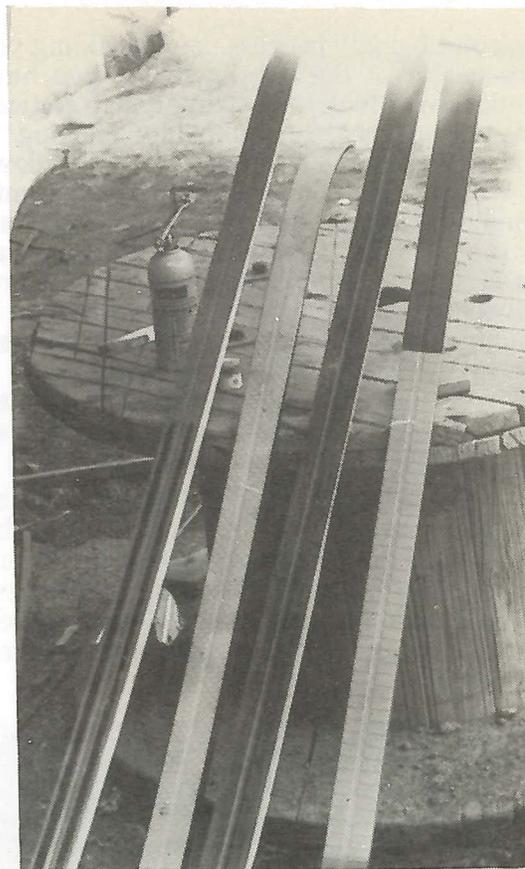
- Metamorphosized snow (Old snow which melts, freezes, etc.)
 - Not included since these conditions are not commonly encountered.
- General Instructions:
Begin with a thin layer of wax for the coldest conditions to be encountered, add a thicker kicker if additional bite is needed. If that isn't sufficient, use the next warmer range wax, first as a kicker, then full length.

We often have klister conditions on the L.T.V. golf course, where the racing track is set. Waxing at room temperature, especially with klister is very easy. The important thing, is to use very little klister. A plastic scraper functions to spread a nice thin layer. Try not to get it on the sides of the skis or in the grooves. Keep the wax warm so it's fluid and it will spread with less effort.

Cleaning skis

"A little heat is necessary to clean the ski. The wax is heated to the melting point then wiped off. They now have on the market a spray wax remover, but it tends to remove the pine tar coating too, but it does work well on the fiber glass skis. Either way it only takes three to five minutes to clean a pair of skis.

"There are three types of skis that never need waxing: the step bottom, the fish scale pattern and the mohair bottom. They give you grip because of their rough surface. However, the tips and tails of the ski not occupied by roughness may be hot waxed for more speed, to keep water out and to avoid delamination. If you wax plastic skis be careful not to overheat the bottom.



Cross Country Skiers

1. Did you leave a note on your car indicating where you have gone, what time you left, how many in your party and when you expect to return?
2. Do you have Food? Water? Matches? Fire starter? Wool Hat? Wool Gloves? Sun Glasses? Sun Protection Cream?
3. Can you read a map? Do you have one? Can you read a compass? Do you have one with you?
4. Have you ever stayed out all night without a tent in the snow, wind, and cold? Do you have any emergency shelter for a bivouac? A tube tent or space blanket? Do you know what "Bivouac" means?
5. Do you know what Hyperthermia and frost bite are? Their symptoms? What to do for it? - What to do to avoid it?
6. Knowledge and preparation add to the fun of winter time on skis and camping -- Have a good day!...and night!

Mountaincraft Inc.

P.O. box 359 • (303) 879-2368
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Springtime ski waxing can be the most frustrating, "When you start in the morning and it's cold and dry the snow is quite easy to ski on, and the wax is green or blue. Then all of a sudden the sun comes out, and you really should have purple or red wax. Then when you get to the top you find it's too sticky to come down. I think every cross-country skier runs into difficulties with waxing.

At times I've seen days where the full spectrum of colors could be used. Skiing Rabbit Ears Pass (seven miles above Steamboat) in mid season, we've used mostly green and blue wax. Later we go to purple and red. Because of the altitude the snow stays nice and dry. Even when the sun comes out the snow is still fairly dry and purple usually does it. I have yet to see a condition on Rabbit Ears Pass when you need klister. By using a little wax or paraffin on the heel plate the snow build up can be stopped.

**"It's so different
that it makes skiing
in the West so much better."**



Al concluded the interview by saying, "The touring in the East generally at lower elevations causes problems because of the softer snow. It's so different that it makes skiing in the West so much better."

