

Breathless

Survival at 29,000 Feet
Above Sea Level

by Camilla Calamandrei



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Introduction

On May 29, 1953, two men named Edmund Hillary and Tenzing Norgay did something no humans had ever done. They climbed to the highest point on Earth, the top of Mount Everest in the Himalaya Mountains.

Hillary was originally from the island of New Zealand, thousands of miles away. But, Norgay grew up very near Mount Everest. Still, the voyage to the top of the highest mountain was an enormous one for both men.

For centuries local people considered the huge mountain sacred. They called the mountain Sagarmatha, "Goddess of the Sky" and Chomolungma, "Goddess Mother of the World." No one tried to climb it. Then, in the early 1920's, climbers from England began to explore the mountain.

By 1953 men had been trying to climb Everest for over thirty years, but no one had made it all the way to the top. A number had died on the mountain. No one knew if humans could even survive while summiting the world's tallest mountain.

When Hillary and Norgay made it to the top, everyone knew it was possible, but still incredibly difficult!



Mount Everest is part of the Himalaya mountain range in Asia. It sits between the countries of Nepal and Tibet. Local people call the Himalaya mountain range the "roof of the world," because it is so tall.



Tenzig Norgay at the top of Mount Everest.

After weeks of climbing, Hillary and Norgay could only stay at the summit for 15 minutes, before they needed to begin their descent.



THE DEATH ZONE

One of the trickiest challenges of climbing Mount Everest is surviving the lack of oxygen at higher elevations. The summit, or top, of Everest sits 29,035 feet above sea level. At 20,000 feet up the mountain there is only half as much oxygen in the air as there is at sea level. At the very top there is only a third of the oxygen that people are used to at sea level. By the time climbers reach 26,000 feet, they enter "The Death Zone." There is so little oxygen at that altitude that humans and animals cannot survive for more than a day or two.

After Hillary and Norgay's great success, other climbers also tried to get to the top of Everest; some succeeded and some failed. In May 1963, the first American expedition reached the summit. This is the story of two of those Americans and their breathless climb to the highest point on Earth.



Climbers on Everest must carefully cross deep rifts in the ice called crevasses, and watch for unstable snow that can cause avalanches.

Chapter 1:

Fire on the Mountain

It is the middle of the night and it is super freezing cold. It might be 15° degrees below zero Fahrenheit without any wind chill factor. The wind is blowing something fierce.

Americans Lute Jersted, 26 years old, and Barry Bishop, 30 years old, are alone in a small two-person tent. They are camping at 27,450 feet above sea level. This is Camp VI.

It is higher here than birds or helicopters can fly. Plants and trees won't grow here either. Jersted and Bishop are trying to get some sleep on the side of the tallest mountain in the world, Mount Everest.

Tomorrow, they will try and make it all the way to the top. Bishop and Jersted have spent years preparing for this day. They have had the help of hundreds of people, including: nineteen other American mountaineers; hundreds of porters to help carry tons of food and equipment; thirty-seven local climbers called Sherpas; and the leader of the expedition, a man from Switzerland named Norma Dyhrenfurth.

The huge American expedition will cost \$400,000 when it is completed. Sponsors include the National Geographic Society, the National Science Foundation, NASA and the military.

The entire team has already been on the move for three months. They started their journey on foot on February 20th, 1963. The hike from Kathmandu, Nepal, at 5,000 feet above sea level, to Base Camp, 17,000 feet above sea level, took three weeks. They spent the next five weeks making plans for the ascent, and living at Base Camp to get acclimated to the thinner air.

The expedition leader picked two climbers to make the first attempt to reach the top of Everest. Jim Whittaker and Sherpa Nawang Gombu were chosen. Bishop, Jersted and others from the team helped get the two climbers and their supplies as far up the mountain as they

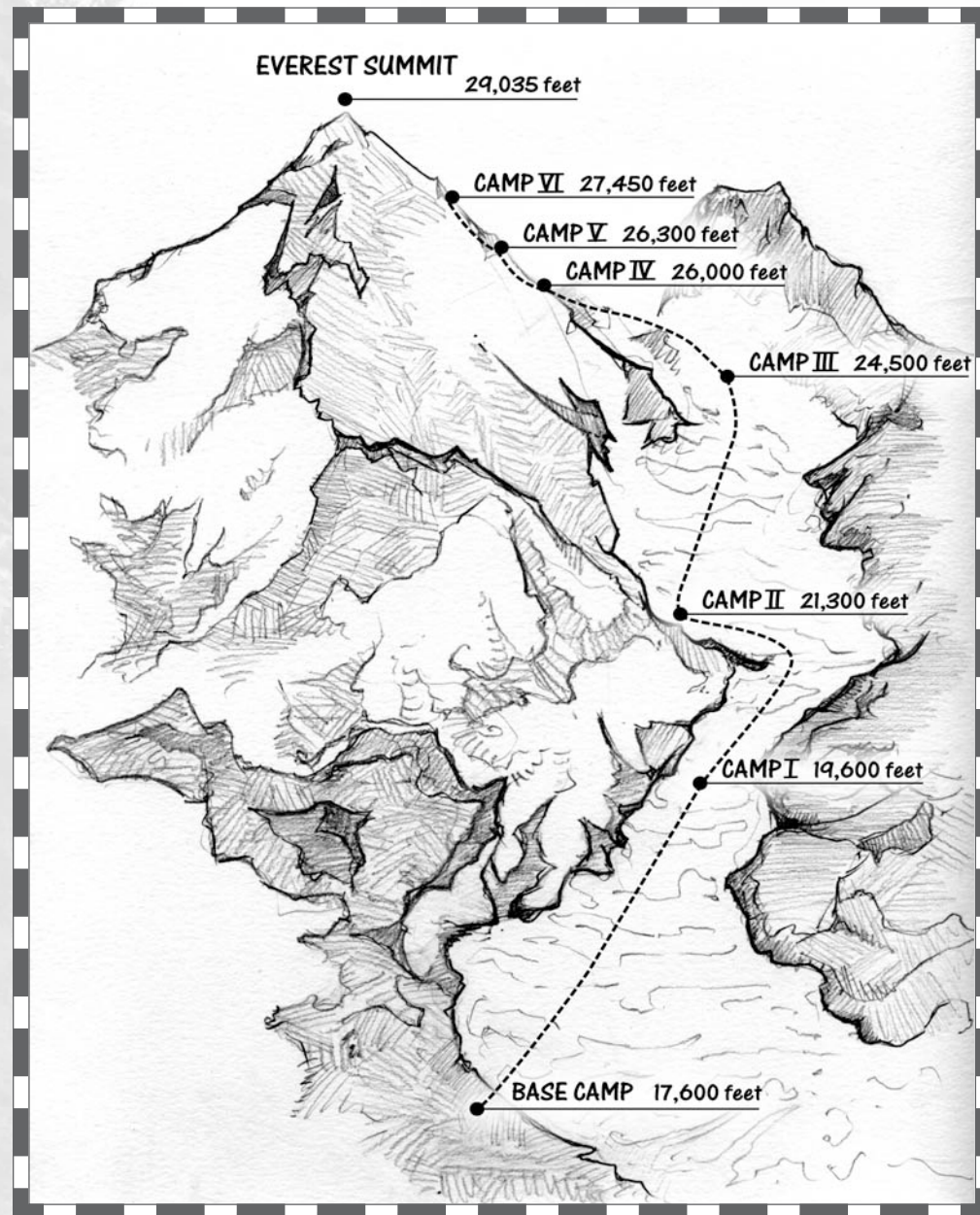
could. Then, Whittaker and Gombu were on their own. On May 1st they became the first members of any American expedition to reach the highest point on Earth. It was a triumph for the entire team.

Now it is May 21 up at Camp VI. Bishop and Jersted have moved from Base Camp and are in position to make their own attempt at reaching the summit. This will be their only chance; they are running out of time. They need to be moving down the mountain before the weather changes, and the dangerous high winds of the jet stream return.

In addition to Bishop and Jersted, the team leader had given the okay for two other climbers, Willi Unsoeld and Tom Hornbein, to try to reach the summit from the West Ridge. This is a route no one has ever tried. The four men hope to meet at the top of the mountain, each pair coming from a different side.

NO PLACE LIKE HOME

The top of Everest is one of the windiest places on earth. It is also one of the coldest. The temperature at the top of Everest never goes above freezing, and the wind chill can make it feel like 100' below zero Fahrenheit!



Today climbers that take the South Col route to the summit only pitching four camps. But in the early days, climbers made more camps. Their equipment was heavier and they had less information about the mountain.

Bishop and Jersted are excited about trying for the summit the next day, but they have other challenges to deal with first. The wind outside the tent is blowing so hard that it makes a disturbing, shrill sound. It is not snowing, but snow that is already on the ground is being pushed around by the high winds. It is piling up on the sides of the tent and pushing the tent inwards. The space inside is getting smaller and smaller. The two mountain climbers are wedged in between clothes, oxygen equipment, medicine, a cooking stove, cameras, film supplies and their hiking equipment.

Bishop is starting to feel scared of being stuck in the small tent that is so tightly packed. He wants to run out of the tent but he controls himself. Outside the tent the jet stream is blowing with the force of a terrible storm. Winds on Everest can blow as hard as a fierce hurricane. Climbers have been blown off the side of the mountain. It is also brutally cold out there. Inside the tent Bishop will be warmer, especially if he stays huddled in his sleepingbag. So, Bishop tries to calm himself, and tolerate the cramped space of the tent.



The Jet Stream

The Jet Stream is wind that circles the Earth at high speeds. This air current, or flow of wind, is located in the area about five miles above the Earth. The summit of Everest is five and a half miles above sea level. It is hit all year long by these extreme winds.

Climbers wait for the right time of year to try and make it to the top of the mountain. In early May the jet stream is usually pushed north and off the main ascent of the mountains by huge rainstorms to the south called 'monsoons.' In the fall the jet stream can also be pushed northward. When the wind is not hitting the summit so strongly, it is possible for climbers to get to the top. Still, they need to watch the skies carefully and wait for the right moment. Jet stream winds can be over 150 miles per hour at the summit!

Bishop and Jersted both know that Bishop's claustrophobia is probably a reaction to the lack of oxygen at this altitude. Humans need oxygen to function. Without enough oxygen the human body and mind cannot work properly, and all kinds of problems can begin pretty quickly. An irrational or exaggerated fear like claustrophobia could certainly be a side effect of not getting enough oxygen. Many climbers report strange behavior and odd thoughts when they are at high altitudes. Most of them feel very uncomfortable and even quite sick.

After several hours of fighting his fear, Bishop makes a difficult decision. He increases the flow of oxygen from his oxygen tank into his sleeping mask. It is a hard choice for him to make, because he only has a small amount of oxygen with him. The two climbers have been using as little oxygen as possible so they will have enough to finish the climb. But, Bishop cannot stand the discomfort any more. The small amount of extra oxygen flowing into his sleep mask makes Bishop feel better. Eventually, both men sleep.

Early the next morning at around 5:00am, Bishop wakes up feeling much better. Jersted is already up. He is melting some snow on a small portable gas stove inside the tent. He is going to make soup for breakfast. Climbers must drink as much liquid as they can and when they can because the cold, thin air at the top of the mountain is also very dry.

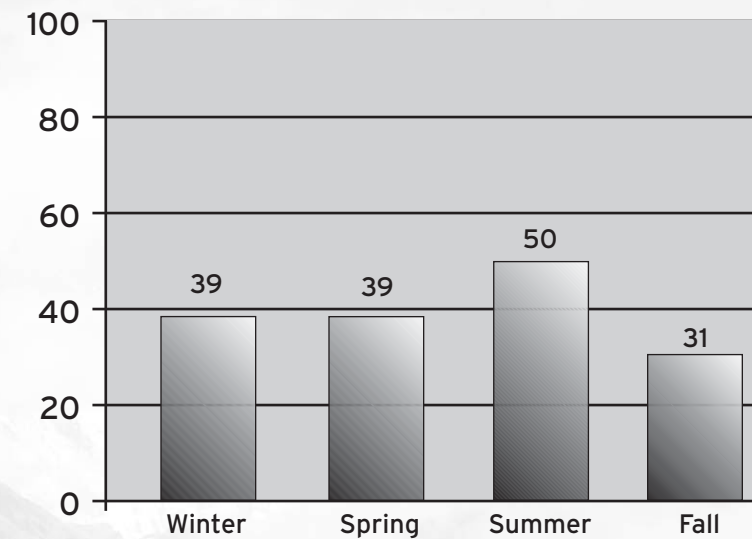
A little while later, Jersted is attaching a new gas cylinder to the stove, but something goes wrong. Suddenly, his beard is on fire. Bishop's plastic oxygen mask also catches fire. His eyebrows and beard are burned. Jersted and Bishop desperately try to find a way out of the tent. They know that outside they can use the snow to put out the fire, and that outside there will be less oxygen to keep the fire burning.

Fire needs oxygen to burn, and because the climbers have been using extra oxygen inside the tent, the tent has become the best place to keep the fire going.

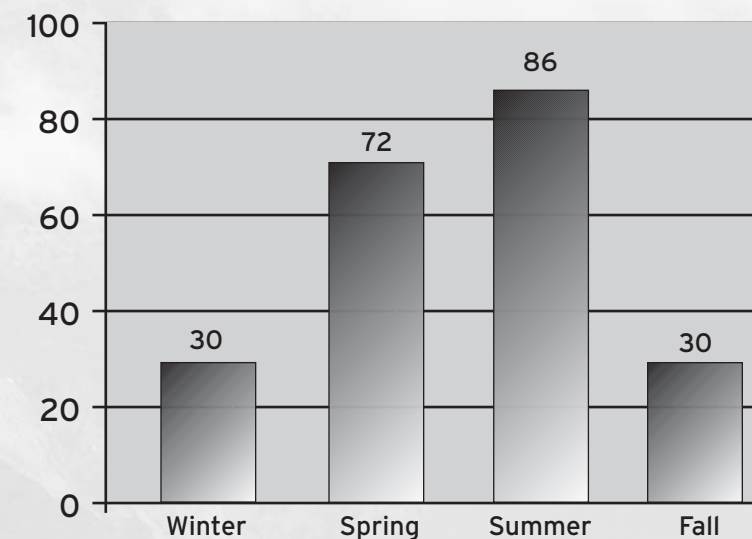


AVERAGE RELATIVE HUMIDITY (%) BY SEASON

TOP OF EVEREST



BASE CAMP AT EVEREST



Rain and Snow on Everest

Humidity is a measure of water in the air. When air is saturated, it can rain or snow.

At Base Camp on Everest, which is already 17,000 feet above sea level, it is most humid from June through September. The relative humidity is close to 100% and it will snow. This is a big difference from the top of the mountain, where the humidity is lower and skies are usually sunny during the summer. It rarely snows at the top of Everest during the months of June, July and August. When it is stormy at Base Camp, climbers often hike right through the storm clouds into blue sky.

Bishop is about to cut open the tent with a knife when Jersted finally manages to open the zippered door. He dives out into the snow. On the side of a steep mountain this is a dangerous move. Jersted stops himself from rolling before he reaches the edge though. One more crisis is avoided.

The two climbers put out the fire by throwing the burning stove into the snow; but, now they are winded and upset. This is their day to summit, and they have lost precious time with this accident. Bishop's illness the night before was not a good omen, or sign, of how things would go in the coming day. Neither is the fire this morning.

Still, they decide to go for the top. The two men crawl back into the smoky tent and they begin the long process of getting dressed.

The Layered Look

At very high altitudes every movement is difficult. It can take hours for climbers to get dressed and ready to climb. They need to wear many layers to keep warm, and they need different equipment for different stages of climbing. Here is what climbers wear today.



Base layer: long underwear and socks



Second layer for 17,000 feet: pants, hiking boots, fleece jacket. (At night add a hat, gloves and a down jacket)

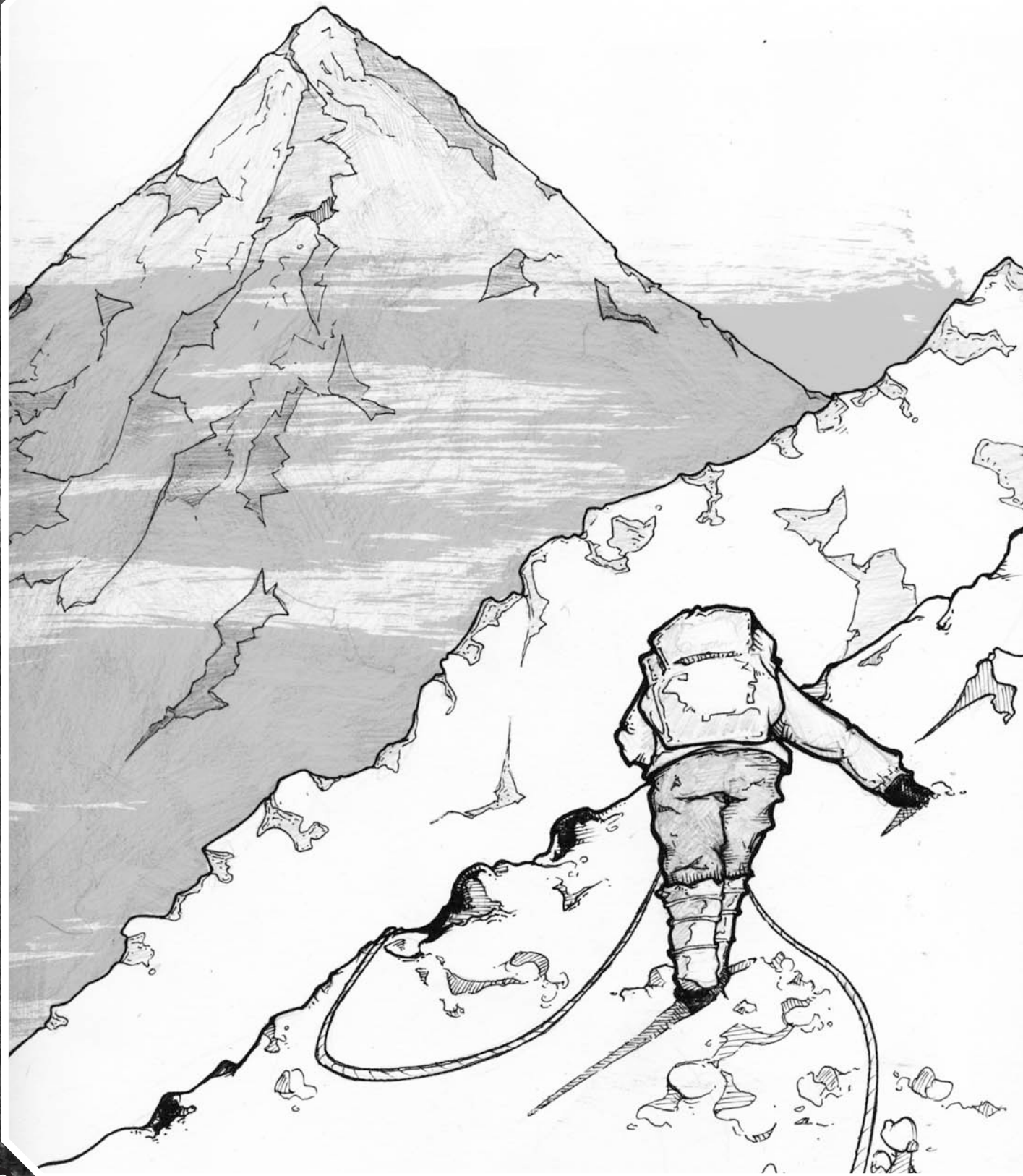


Second layer for 17-24,000 feet: wind pants, boots, hat, gloves, storm jacket, sun goggles, plus gear for climbing ice including: crampons, harness, and gators



Second layer for 26,000 feet and above: down suit, glasses, heavy gloves, face mask, oxygen bottle, mask and regulator

During early expeditions climbers wore clothes made out of wool, canvas and leather. This was very heavy and didn't keep them warm in severe weather. Today, climbers have clothes made out of all kinds of new materials that are super warm and lightweight.



Chapter 2:

Striving for the Summit

At 8:00am Bishop and Jersted finally start out. They still haven't had any breakfast, but want to get going. Bishop would later describe their progress that morning as a "slog." They are moving at a "monotonous, dreary pace."

It is a clear but windy day. They are wearing sunglasses and hats to protect them from the blinding sun. After so many weeks on the mountain, they are already quite sunburned.


Looking out over the tops of other mountains, they see fluffy white cumulus clouds. Bishop and Jersted are attached to one another by a rope. Jersted leads the way. They are following the same path that two of their teammates took just three weeks earlier. It is common for climbers to summit in pairs. Going alone is considered too dangerous, and going with more than two people can slow down the effort.

In this part of the climb the ground is made up of shaky rock that is covered with snow and ice in some places. Soon, they will have to go directly up a long slope covered in snow. Bishop is not feeling well. He knows he is not at his best, but he keeps going.



CLOSER TO THE BURNING SUN

The sun is much more dangerous to people at high altitudes than it is at sea level. At sea level, where the atmosphere is thicker, more dangerous ultra-violet rays from the sun are absorbed. The atmosphere protects us from these rays. At high altitudes where the air is thin, more radiation from the sun reaches our skin. The other disadvantage on a mountaintop is that pure white snow reflects more sunlight onto a climber's skin.



Just before 11:00am, the two men reach the crest of the Southeast Ridge.

Now they have to walk across a “knife edge” of snow and the wind is getting stronger. Bishop takes the lead. On his right side is a 10,000-foot drop into Tibet. On his left is a steep half-mile drop-off. After a while they can see the South Summit of the mountain. This is an important milestone since it means the main peak is coming next.

The South Summit is 500 feet above them. Two and a half hours later, they are less than half way up. It is very steep and tricky climbing.

They stop briefly for the only food they will eat that day. Climbers at high altitudes lose their ability to digest food and so they also lose their appetite. When the body goes without oxygen for too long, it begins to shut down. The stomach is one of the first organs to stop working. Bishop and Jersted each eat less than half a candy bar.

Ten minutes later they start their climb again. At 28,500 feet Bishop runs out of oxygen. Jersted’s canister is almost empty as well. They stop to replace their empty canisters with new ones that are nice and full of oxygen. They are happy to leave the empty canisters behind; they are heavy even when they are empty. But, they are also aware that they are now using their last supply of oxygen. Suddenly, Bishop slips on one of the empty canisters. Fortunately, the two men are still attached by rope. Jersted catches Bishop before he falls too far. It is another close call.

At 2:00pm, the sky is “piercingly blue.” Bishop and Jersted have reached the South Summit. They are standing at 28,750 feet above the level of the ocean. The wind is gusting 60 to 70 miles per hour.

The South Summit itself is 500 feet higher than any mountain on Earth.



The lack of oxygen is taking its toll now more than ever. The two climbers are straining with every breath, and they know they must conserve what oxygen they have in order to get down the mountain. So, each man turns down the flow of oxygen from his tank to save a little more for later.

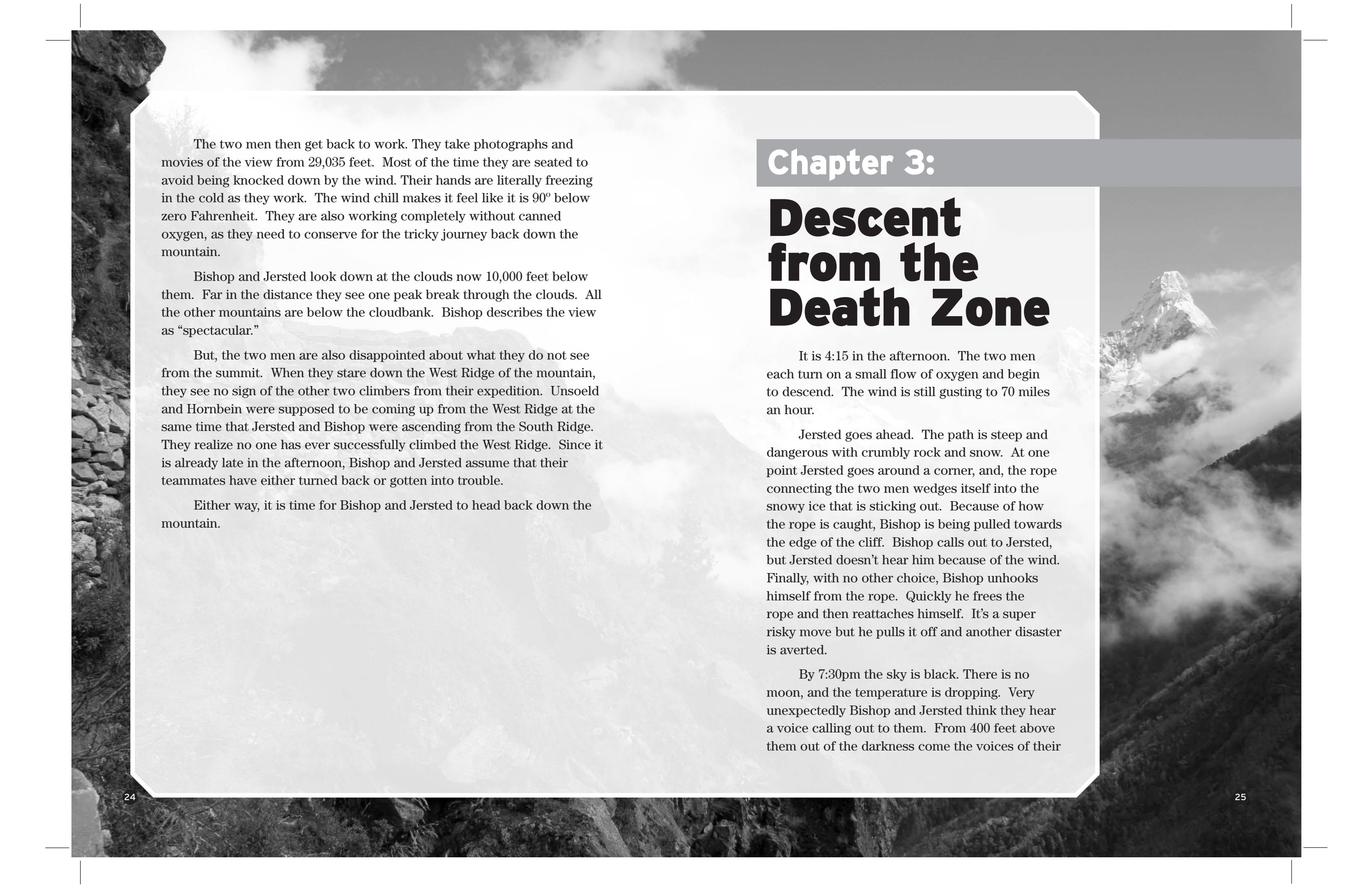
From the South Summit they can see the “true peak” of the mountain. They will need to scale down a steep wall before they can move up again towards their destiny. But, now Jersted starts to behave strangely. He walks down the mountain in the wrong direction! Bishop has no idea where Jersted is going. When Jersted reaches the end of the 75-foot rope that attaches him to Bishop, he realizes that he has made a “very foolish mistake.” He painfully works his way back up to Bishop. Then, they start the tricky descent in the correct direction. They are on the path to the summit.

Jersted leads the way. The wind is intense. Bishop is breathing seven breaths for each step he takes. The two men have been climbing for over seven hours. Finally, Jersted sees the top! There is an American flag flapping in the wind. Their teammates, Whittaker and Gombu, planted it there three weeks earlier. Bishop and Jersted are thrilled to see it.

Jersted waits for Bishop to get to him. Then, the two men walk the last one hundred feet together, arm-in-arm. It is hard to breathe, harder to walk and painful even to think. But, gasping for air, they finally make it to the flag.

It is 3:30pm and the wind is blowing wildly. Bishop and Jersted have scaled the highest peak on Earth!

They cry with joy and relief.



The two men then get back to work. They take photographs and movies of the view from 29,035 feet. Most of the time they are seated to avoid being knocked down by the wind. Their hands are literally freezing in the cold as they work. The wind chill makes it feel like it is 90° below zero Fahrenheit. They are also working completely without canned oxygen, as they need to conserve for the tricky journey back down the mountain.

Bishop and Jersted look down at the clouds now 10,000 feet below them. Far in the distance they see one peak break through the clouds. All the other mountains are below the cloudbank. Bishop describes the view as “spectacular.”

But, the two men are also disappointed about what they do not see from the summit. When they stare down the West Ridge of the mountain, they see no sign of the other two climbers from their expedition. Unsoeld and Hornbein were supposed to be coming up from the West Ridge at the same time that Jersted and Bishop were ascending from the South Ridge. They realize no one has ever successfully climbed the West Ridge. Since it is already late in the afternoon, Bishop and Jersted assume that their teammates have either turned back or gotten into trouble.

Either way, it is time for Bishop and Jersted to head back down the mountain.

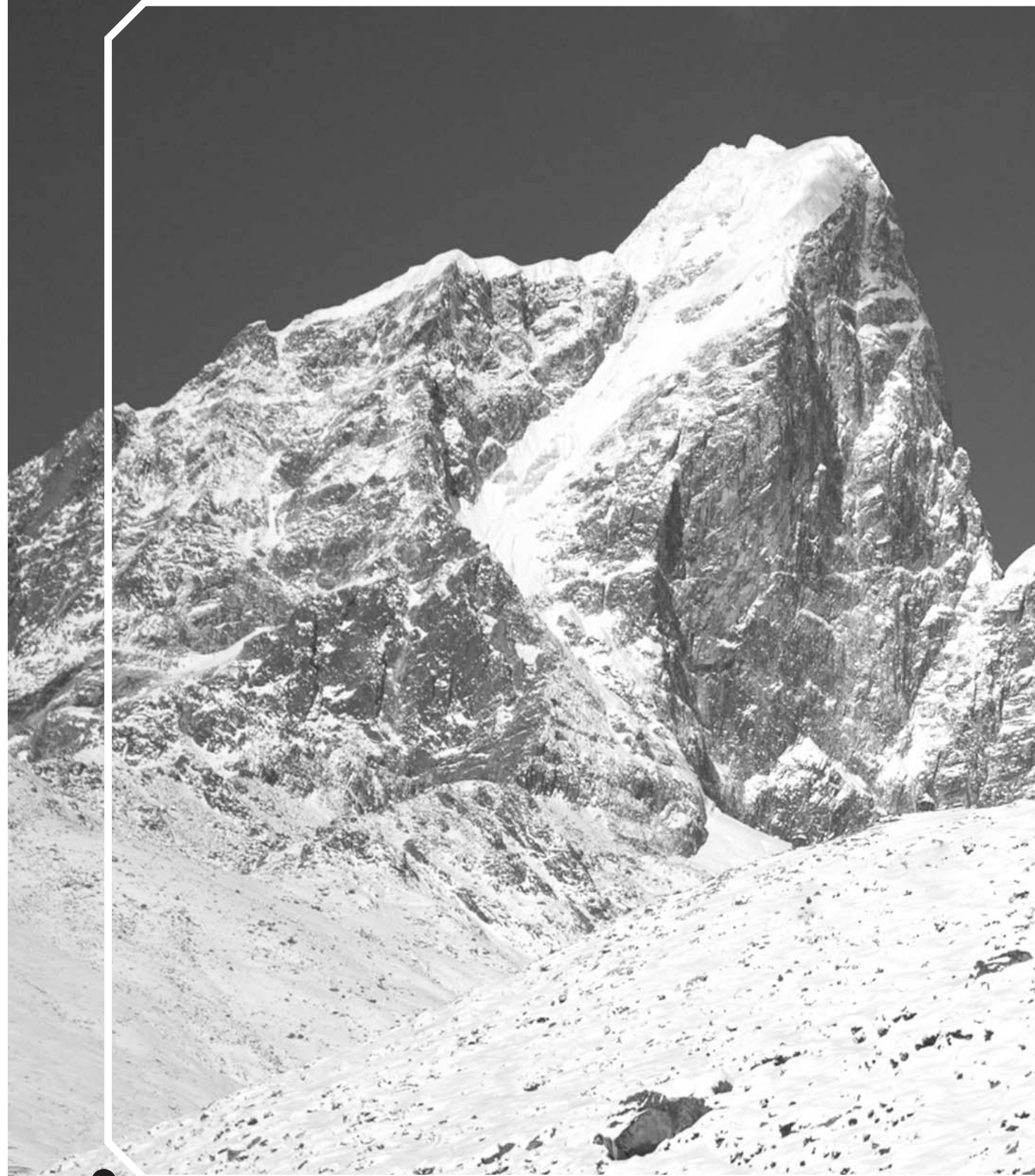
Chapter 3:

Descent from the Death Zone

It is 4:15 in the afternoon. The two men each turn on a small flow of oxygen and begin to descend. The wind is still gusting to 70 miles an hour.

Jersted goes ahead. The path is steep and dangerous with crumbly rock and snow. At one point Jersted goes around a corner, and, the rope connecting the two men wedges itself into the snowy ice that is sticking out. Because of how the rope is caught, Bishop is being pulled towards the edge of the cliff. Bishop calls out to Jersted, but Jersted doesn't hear him because of the wind. Finally, with no other choice, Bishop unhooks himself from the rope. Quickly he frees the rope and then reattaches himself. It's a super risky move but he pulls it off and another disaster is averted.

By 7:30pm the sky is black. There is no moon, and the temperature is dropping. Very unexpectedly Bishop and Jersted think they hear a voice calling out to them. From 400 feet above them out of the darkness come the voices of their



teammates Unsoeld and Hornbein. Unsoeld and Hornbein are the first people in the world to have reached the summit from the West Ridge! They have come across the top of the mountain and are now taking the same descent as their teammates.

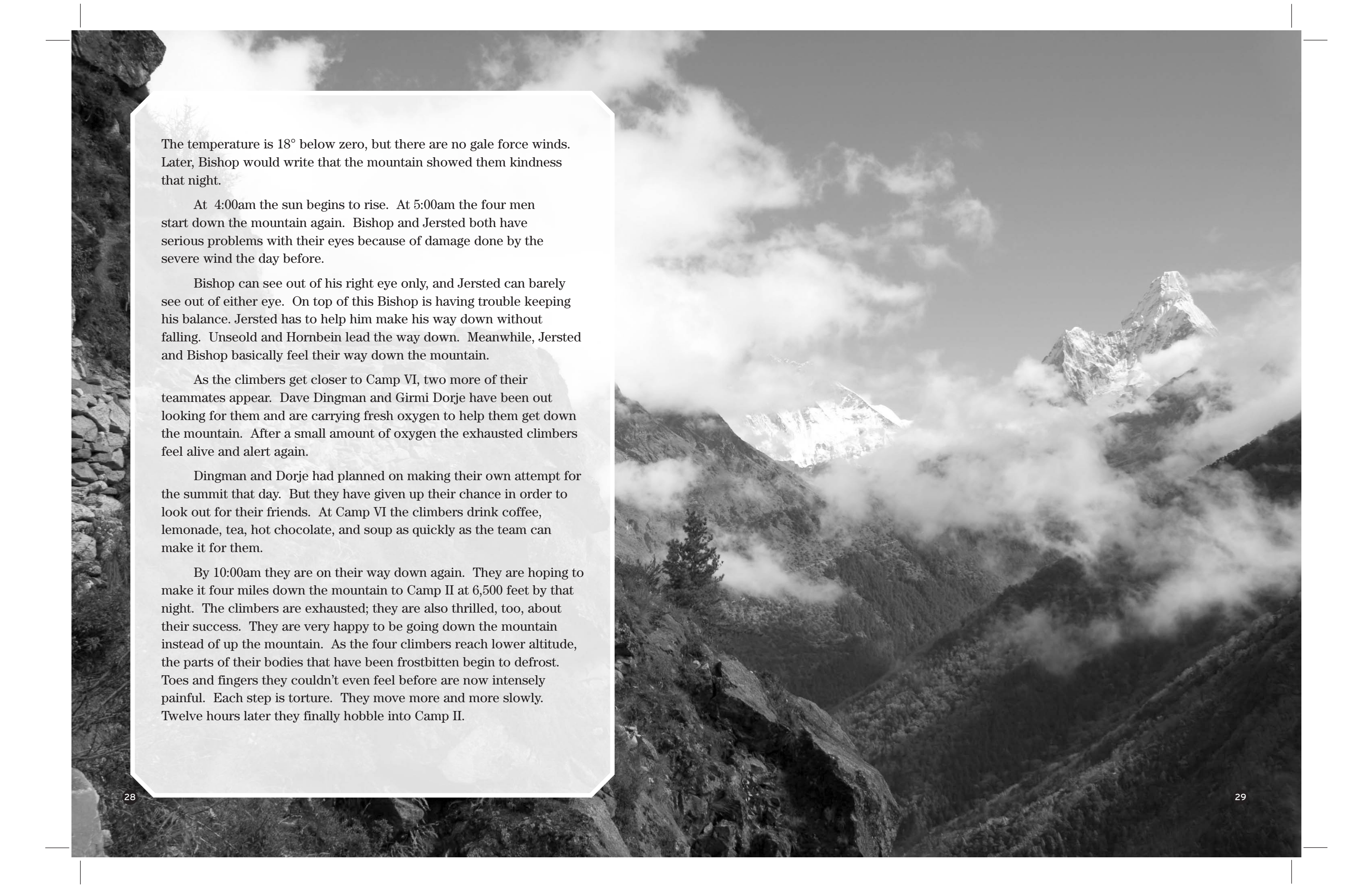
Bishop and Jersted wait for their friends. It is amazing that all four men have been to the summit of the world's tallest mountain. But this is no time to celebrate. All four climbers need to focus on getting down the mountain alive.

Bishop and Jersted lean on their axes while they wait. They use their voices to help guide Unsoeld and Hornbein down the sharp slope in the dark. By waiting for the other climbers, Bishop and Jersted lose precious time they could have used to get back to Camp VI. They get very, very cold standing in one place. In fact, their feet begin to freeze. First there is great pain, then numbness. It is frostbite. They have very little oxygen left.

Two hours later Unsoeld and Hornbein appear out of the dark night. The four men band together to continue the descent. Bishop and Jersted have been hiking for 11 hours.

At midnight the four are still trying to find their way to Camp VI, but they can't. They are at 28,000 feet above sea level and are forced to camp out for the night. They have no tents or gear. There is no oxygen left. They are not sure they will survive the night.

The four men lie huddled between some rocks. Each is freezing cold and in pain. By some miracle the wind that has been howling, stops.



The temperature is 18° below zero, but there are no gale force winds. Later, Bishop would write that the mountain showed them kindness that night.

At 4:00am the sun begins to rise. At 5:00am the four men start down the mountain again. Bishop and Jersted both have serious problems with their eyes because of damage done by the severe wind the day before.

Bishop can see out of his right eye only, and Jersted can barely see out of either eye. On top of this Bishop is having trouble keeping his balance. Jersted has to help him make his way down without falling. Unseold and Hornbein lead the way down. Meanwhile, Jersted and Bishop basically feel their way down the mountain.

As the climbers get closer to Camp VI, two more of their teammates appear. Dave Dingman and Girmi Dorje have been out looking for them and are carrying fresh oxygen to help them get down the mountain. After a small amount of oxygen the exhausted climbers feel alive and alert again.

Dingman and Dorje had planned on making their own attempt for the summit that day. But they have given up their chance in order to look out for their friends. At Camp VI the climbers drink coffee, lemonade, tea, hot chocolate, and soup as quickly as the team can make it for them.

By 10:00am they are on their way down again. They are hoping to make it four miles down the mountain to Camp II at 6,500 feet by that night. The climbers are exhausted; they are also thrilled, too, about their success. They are very happy to be going down the mountain instead of up the mountain. As the four climbers reach lower altitude, the parts of their bodies that have been frostbitten begin to defrost. Toes and fingers they couldn't even feel before are now intensely painful. Each step is torture. They move more and more slowly. Twelve hours later they finally hobble into Camp II.

The following morning is May 24th. The team breaks down Camp II and they move down the mountain. They are a bit sad that the journey is over.



When the time comes for the climbers to make their way back to Kathmandu, Hornbein sets out on foot. Porters carry Bishop, Jersted and Unsoeld, who each have extreme frostbite in their feet and toes and cannot walk. Four porters are assigned to each man and trade-off carrying him. Soon they make it a race to see which group can move their climber along the fastest. In a couple of days the climbers reach a place where an emergency helicopter can come and pick up the men. Bishop and Unsoeld are flown to the United Mission Hospital in Kathmandu. Their wives are there to greet them. It turns out that their feet can be saved but many of their toes need to be amputated.

Jersted is expected to be able to walk in a few days so he remains on the mountain. When he is feeling better, he hikes for two weeks, back through the forest and the jungle to Kathmandu where they started.

Thinking about it more, Bishop decides that you can challenge Everest but you cannot conquer it. When he wrote about his experience on the tallest mountain in the world, he said, "There are no true victors, only survivors."

Afterword

The Americans who summited Everest in 1963 were only able to reach their goals after years of planning and effort. It still takes years of planning and effort to summit the Earth's tallest mountain, but some things are different now. The climbing world has changed a great deal since 1963. Everest is still windy, freezing cold, and dangerous, but the mountain is much better known and climbers can follow established routes. New technology also means that climbers have better clothing, tents, oxygen tanks and communication systems.

Today climbers go in smaller groups. Less experienced climbers can even hire people to guide them. It is not unusual now for several hundred people to attempt to summit the mountain each year.

In the fifty years since the first people climbed Everest, it is estimated that over 10,000 men and women have attempted to reach the summit. About 1,200 have succeeded, and approximately two hundred died trying.

