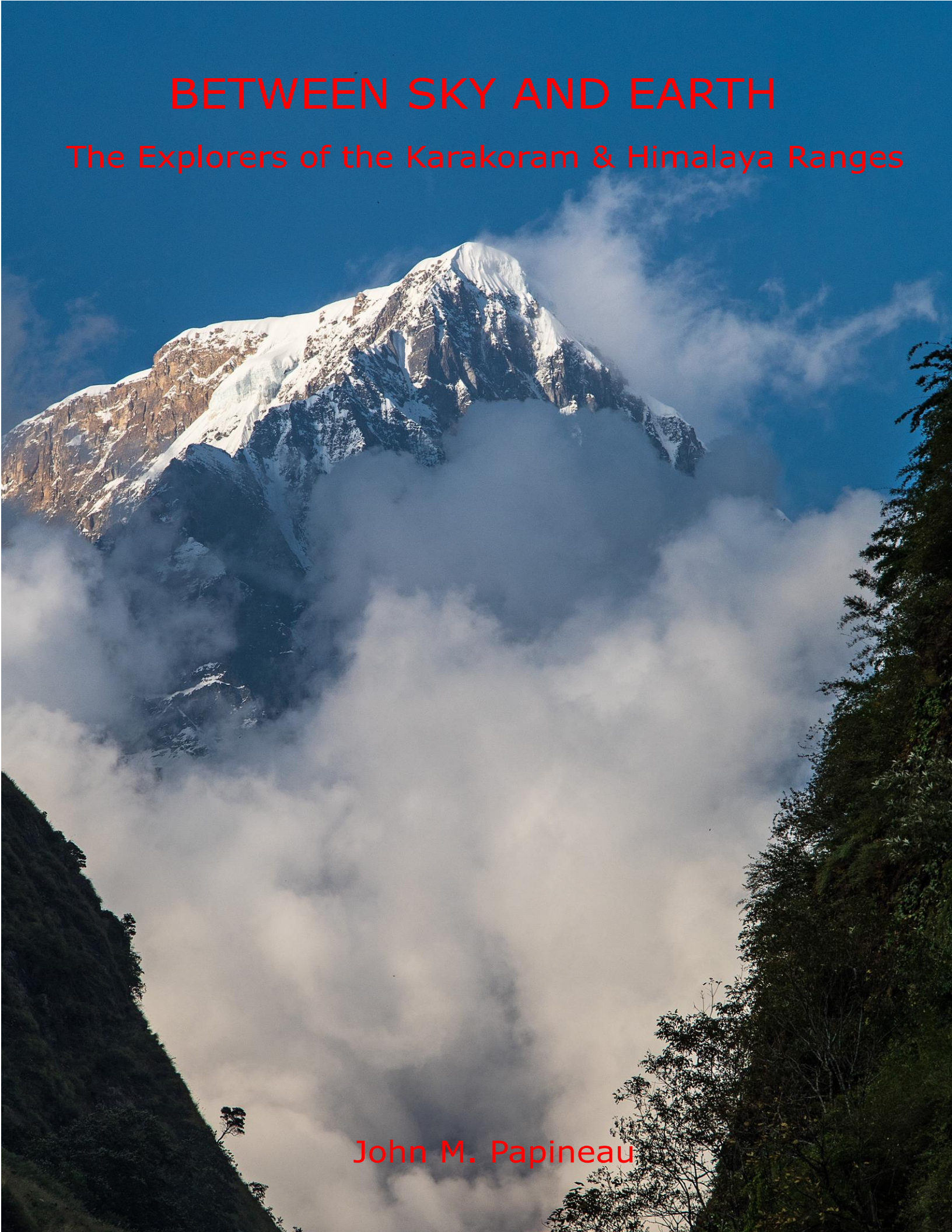
BETWEEN SKY AND EARTH

The Explorers of the Karakoram & Himalaya Ranges



John M. Papineau

Between Sky and Earth:

The Explorers of the Karakoram and Himalaya Ranges

John M. Papineau

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Email: nembrothaguttata@gmail.com

Dedicated to:
Chris Cochran 1971-1996
Who's love of all things alpine is rarely equaled

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INTRODUCTION

Congratulations! You have been selected as the leader of a scientific and survey expedition destined for a remote part of the Indian Himalaya; the year is 1910. Your expedition will be in the field for three months and hence all of your supplies including food will have to be carried. You calculate that it will take 100 porters to move *your supplies* from the trailhead to basecamp; this is based on the known fact that the local porters will carry loads weighing 70 lbs. Since there are no villages in which the porters can purchase food, *their food* needs to be carried as well. If each porter's daily ration of food (roasted barley, sugar, salt, oil, cigarettes) weighs 1.5 lbs and it will take fifteen days for the trek to basecamp and five days for the porters to return to the trailhead, the question you must answer is: how many additional food-carrying porters will you need to hire?

Such was the way of expedition logistics, especially in the days prior to the development of roads and airstrips located deep in the mountains. When we read about expeditions that took place prior to the mid-20th century, we need to view them through the proper lens; it is easy to gloss over the logistics nightmare that most expeditions faced in those days. They often had to trek for two to three weeks just to get to a point where we might start from today. Travel to and from greater India took weeks by steamship, each way; not the twenty-four to thirty-six hours that it currently entails as we sit comfortably at 35,000 ft.

So, how many extra porters will you need to hire? The arithmetic looks like the following: 100 porters times twenty days (fifteen out plus five back) times 1.5 lbs per day per porter, equals 3,000 lbs. Now we take 3,000 lbs and divide by 70 lbs per porter, and this equals forty-three porters. That was pretty easy, you need to hire forty-three food porters to carry the required food for the initial 100 porters. But now we have forty-three extra mouths to feed over a twenty-day period, so we need a few more food porters. Forty-three porters times twenty days times 1.5 lbs, equals 1,290 lbs. That much food will require 1,290 lbs divided by 70 lbs per porter, or about 18 porters. We have to now cover the eighteen food porters who are carrying the food for the initial forty-three food porters. Eighteen porters times twenty days times 1.5 lbs, equals 540 lbs. Will this ever end? 540 lbs divided by 70 lbs per porter, rounds up to eight porters. We are not done yet: eight porters times twenty days times 1.5 lbs, equals 240 lbs. 240 lbs divided by 70 lbs per porter, equals three porters. And finally, three porters times twenty days times 1.5 lbs, equals 90 lbs, that will require just over one additional porter.

The sum total of food porters is 43+18+8+3+1=73. So, the expedition will depart the trailhead with 173 porters—100 porters to carry the expedition's gear and seventy-three porters to carry the food for the entire corps of porters. Now, if you're on a very tight budget and/or just want to economize, you could release food porters as you no longer need them. For example, after two days the porters will have eaten 519 lbs of food (173 porters times 1.5 lbs times two days which equals 519 lbs). So, 519 lbs divided by 70 lbs per porter, equals seven so you could now release seven porters and save a bit on food.

If you wanted to, you could go back and readjust your starting number of food porters based on the rate at which you are going to dismiss them. You get the idea. This scenario is similar to the ones I used to read about as a youth. Those mammoth expeditions of the early- and mid-20th century would often employ hundreds of porters; they were logistics headaches long before spreadsheets became available. They were exercises in trial and error; a lot of errors were made, which of course made them a trial to those who had to implement them.

This book is about the 'exploration' of two of Earth's magnificent mountain ranges, which vary in elevation from near sea level to just over 29,000 ft. I use the word 'exploration' in a broad sense; not only in the more traditional usage of people going into a region where no one else, or few people, had gone before. This type of exploration often involved surveying, mapping, and photographing the terrain. On their return to civilization, explorers made their findings known to the wider world. However, 'exploration' is also used to signify the demystification of individual mountains. Hence the tribulations and triumphs of the first mountaineers to tackle a specific peak or cluster of peaks is covered as well. The latter is exploration but on a smaller scale, and often with a more vertical profile. In addition to surveying and mountaineering considerable energy was spent on the study local geology, glaciology, meteorology, as wells as botany and zoology. A number of expeditions returned to their homelands with hundreds if not thousands of samples ranging from rocks, birds, rodents, and flowers; many of which were new to western science.

It should be noted that in this account there is bias towards the exploits of Western personalities. This bias is in large part due to the fact that the Westerners wrote and photographed their adventures, and hence made them available to a wide audience. A large part of this vast, mountainous region has been inhabited for thousands of years by peoples of mixed ethnic stock—Mongolian, Tibetan,

and Aryan—and in various combinations. These are some of the hardiest people on earth, as this region maintains a severe climate and rugged terrain to say the least. We know that trade routes have crisscrossed the Karakoram-Himalaya since people have lived in those ranges. So, a few local inhabitants traveled great distances through extremely rough terrain in order to conduct trade or go on a religious pilgrimage. Hence, we must acknowledge that this is their home and some of them knew a lot about it long before it was brought to the attention of the Western world.

Many traditions (myths) are held by various local inhabitants of the Karakoram-Himalaya that they are the descendants of Persians or Alexander the Great. The Hunzakuts, the inhabitants of Hunza in northeastern Pakistan, in particular claim to be direct descendants of Alexander or some of his men. There is no proof, although a significant number of Hunzakuts do possess blue eyes and reddish hair; obviously somewhere along in their lineage, a 'foreign' bloodline was introduced. A genetic study in the early 2000s did not find any link between the Hunzakuts (and other groups that claim to be descendants of Alexander) and modern Greeks (Qamar, 2002). We know Alexander was in Central Asia and was in the southern Pamirs, but when he moved into India it appears that he and his army only went as far east as the Jhelum River and not much north of modern Abbottabad. Although the Persians, and a little later Alexander's army, may have skirted the Karakoram-Himalaya, they certainly did not explore it in the modern sense of the word.

Despite the ambiguity of who were the first non-Asians to infiltrate the *terra incognita* of the Karakoram-Himalaya, the first to document their travels in the modern era found that overall, most local inhabitants were either indifferent towards the mountains or scared of them. In some cultures, the high mountains were the home of the gods—whether friendly deities or vengeful overlords. Most villagers lived and died within a few miles of where they were born. Travel was on foot or maybe on the back of a yak or donkey, but they never went very far. There were exceptions: merchants and shepherds in particular. Merchants often endured immeasurable difficulties in order to conduct business, sometimes spending days on a glacier so they could shave some time and distance off a given route. Shepherds, although not venturing far from home, frequently led their goats, sheep, and yaks into high-altitude pastures, some of which were difficult treks in their own right. Although local inhabitants were not technical climbers, the early explorers found that many were comfortable on very steep ground once they started to act as guides, porters, and expedition support staff.

One interesting aspect regarding the practices of the various mountain inhabitants of the Karakoram-Himalaya is their use of high-elevation glaciated passes. By the time Western surveyors and

explorers reached the scene (roughly from the mid-19th century onwards), most of the high pass routes were no longer in use. This is more so in the Karakoram than in the Himalaya. When the early explorers inquired about the reason why local inhabitants no longer used the passes, no one really seemed to know. There were stories imbedded in most cultures regarding their ancestors using these passes, and there is some archeological evidence. Eric Shipton in particular wondered why this was the case; he speculated that changes in configuration of the glaciers made access more difficult beginning in the 19th century. Of course, glaciers change in response to the climate system in which they exist; but the lag can be years to decades.

Throughout this text, I won't be drawing too much attention to altitude records, as it is a difficult and problematic issue to sort out. There were a number of past claims made by individuals regarding their achievement in reaching some given altitude, but those claims were often disputed even back in their day. Hence there is no way for us to weigh in on the issue without considerable documentation. There is also the issue of a person reaching a given elevation on a mountain but not reaching the summit, versus a person climbing to the summit of a lower elevation mountain. Therefore, I will only mention altitude records when it is generally accepted by the contemporary institutions, such as the Alpine Club or Royal Geographical Society. If you were to peruse through the journal articles of the aforementioned institutions from about 1880–1920, you will find all sorts of claims, counterclaims, and debate regarding this topic. The most famous one is the first ascent of Kabru on the Nepal-Sikkim border; did Graham, Kauffmann, and Boss actually climb this difficult mountain in 1883? You can read about it in the article "Kabru 1883: A Reassessment," W. Blaser and G. Hughes, *The Alpine Journal*, 2009, pp.219–28.

A note on the spelling of topographic and place names. Many have changed since they were first explored. I will often use the name as it first occurs in the relevant literature, but give its modern name or spelling as well. In some cases, I will continue to use the older name as it is 'embossed' in the fabric of mountain exploration.

Although we live in the age of GPS, satellite imagery, and laser telemetry, the known altitudes of various mountains are not as exact as you may think they would be. Various maps and satellite imagery often give slightly different numbers. Keep in mind that just about all of the tall mountains are covered in snow and ice, which can vary seasonally and from one decade to the next. With that in mind, I have generally used elevations listed in the Alpine Club's Himalayan Index, which may differ from other values

that you find in an Internet search. Elevations for the plethora of passes cited in the text is a little more difficult, as I used various maps, digital imagery, and various Internet sources. These should be treated with a given amount of latitude. Generally, if only one elevation is listed in the text, it will be the most recent value. In some places, I have quoted the value given by an early explorer with the more recent value as well. If you are under the impression that modern technology has 'solved' all of the mysteries of elevated heights, think again!

The best online map source for details of the Karakoram-Himalaya is https://www.himalaya-info.org/. This features detailed maps, with the majority of the peaks and passes labeled. For larger-scale maps, I found Mapcarta fairly good, but the quality varies from region to region in terms of the labeling of geographic features. Google Maps is OK if you're zoomed out, but really lacks details in the mountainous terrain of the Karakoram-Himalaya. I also found that the quality of the imagery from Google Earth varies significantly as well. In some regions, you can zoom in and fly around a mountain, and in others the quality is extremely poor. As noted above, beware that geographic and topographic names have changed over time. The name of a given location or feature as assigned by an early explorer may or may not be the same in this era. This is exemplified for place names in Tibet, which have changed considerably from pre-Chinese invasion to post-invasion.

For sources, I have used the primary works of the explorers themselves; these consist of journal articles and books, many of which are fortunately available online. Because they are considered works of historical significance, they can be referenced for free on a number of websites. A significant number of university libraries around the world contain collections of these works; however, I found the two most useful websites are: HathiTrust Digital Library (www.hathitrust.org) and the Internet Archive (archive.org).

Before we embark on this journey, two points of trivia are worth mentioning. First, there have been several massive expeditions in terms of the number of porters that they employed. One of the earliest was the French Karakoram expedition of 1936. Their objective was Gasherbrum I (26,509 ft, 8080 m). They departed the village of Askole in the Central Karakoram with a staggering 670 porters, and they still employed 500 when they reached their basecamp miles up the Baltoro Glacier. They did not summit, in part due to the weather—which turned for the worse once they had climbed to the upper mountain–but made a valiant attempt, topping out around 23,000 ft (7010 m). Next, was the 1960 Indian Mt.

Everest Expedition which employed somewhere on the order of 700 porters. Climbers ultimately reached the base of the South Summit before turning back in the face of stormy weather. The grandaddy of expeditions that we have details about is the 1963 American Mt. Everest Expedition which, in the words of its leader, Norman Dyhrenfurth, used an “army of porters”; which translates into 909. At least the expedition managed to climb the mountain via two routes. (The Chinese have sponsored some massive Everest expeditions of which details are missing)

Secondly, there have been several expeditions which were accompanied by dogs to some pretty amazing altitudes. I have noted these as they occur in the narrative. These were not simple unglaciated routes; these dogs navigated some very complex terrain; they were the real ‘Glacier Dogs.’ In some cases, the dogs were owned by one of the expedition members, or they were purchased while the expedition was on its approach trek.

Chapter 1

Coming to Terms with the Environment

During the summer of 1892, an expedition of British subjects slowly worked its way up the 30-mile-long Hispar Glacier in the Central Karakoram Range. Although it was mid-summer, the weather had primarily been cloudy with on-and-off snowstorms. They ultimately reached a pass that connected the Hispar Glacier with the Biafo Glacier to the south. Fortunately, the clouds parted for a time and they were able to view the surrounding peaks.

The expedition leader, William Conway, wrote, "It was beyond all comparison the finest view of mountains it has ever been my lot to behold, nor do I believe the world can hold a finer one" (*Climbing and Exploration in the Karakoram-Himalayas*, 1894, p.377). He was standing in the heart of the Karakoram Range (Hispar Pass), literally surrounded by great ice-covered peaks and countless granite spires. It was all snow and ice with a sprinkling of exposed rock.

In 1937, another British mountain explorer found himself at the head of the K2 Glacier, which is located on the northwest side of K2 (28,251 ft). He spent about an hour gazing upwards, and of the view he wrote, "The cliffs and ridges of K2 rose out of the glacier in one stupendous sweep to the summit of the mountain, 12,000 feet above. The sight was beyond my comprehension, and I sat gazing at it, with a kind of timid fascination …" He added, "Sitting alone gazing at the cirque forming the head of the K2 Glacier was an experience I shall not forget; no mountain scene has impressed me more deeply." (*Blank on the Map*, 1938). These are the words of Eric Shipton, as true a connoisseur of mountains as anyone.

Visser, Workman, Kellas, and Bruce are not exactly household names when most 21st-century armchair explorers and adventurers think of the greats who have explored and climbed in the Karakoram-Himalaya. They should be. I won't dwell on the reasons why they are virtually forgotten today; nevertheless, this book will cover their respective journeys in some detail, and then you can decide for yourself whether they deserve a place in the mountain explorer's pantheon.

In order to fully appreciate and understand the exploits of these early explorers, the reader should have some sense of the geography, geomorphology (earth structure), and even a little political history of the region. If this is not for you, then skip ahead to Chapter 4. For those readers who have visited the Karakoram-Himalaya, then you will already have an appreciation of the scale of the mountains and the difficulty of travel, much more so than you would have done a hundred or more

years ago. Today, there are roads, many of dubious quality, as well as airstrips all over the Karakoram-Himalaya (more so in Nepal than elsewhere), but keep in mind that it took these pioneers weeks to trek to a spot where today a trailhead might commence.

For example, you can now fly into Skardu from Rawalpindi in about fifty minutes, when the weather allows. Or you can drive to it in about fifteen hours. One hundred years ago, your options were to use your feet or ride on the back of a donkey. Either way, it would take about two weeks if the weather was favorable and there was not too much snow in the high passes. In a similar fashion, today you can hire a jeep to haul you and your gear well into the Braldu Valley from Skardu. In the old days, your option was to walk, so add on at least another week of travel, one way from Skardu. All of that trekking was just to arrive at your 'starting point.' Currently, if you're in a remote region and experience an emergency, there is a reasonable chance you can make a call on a satellite phone and request a helicopter rescue. Back in the day, a rescue was whatever resources your own party could muster.

Another important factor to note is that as men and a few women climbed higher and higher, they did not really know what to expect from their own bodies; high-altitude physiology was not fully understood until the mid-20th century. For example, in many early accounts when an explorer/mountaineer went to altitude, he or she would from time to time diligently report their heart rate, ease or difficulty of respiration, and their general mental state. It was thought in many circles prior to World War I that the highest summits were well above a level where a human could operate without supplemental oxygen.

In addition, the people you are going to read about in this account were really operating in the '*incognita*,' not only in the sense of the landscape (*terra incognita*) but in just about every other possible way as well. Like the late-15th century Portuguese and Spanish explorers who ventured into the Atlantic in their small sailing ships, incrementally increasing the distance from the Iberian Peninsula and from the shores of Africa, explorers of the Karakoram-Himalaya typically ventured relatively short distances off the well-used local trails before heading into the glacial wastelands of the highest terrain—with a few exceptions.

Today, we think that virtually every Westerner goes into Himalaya either to trek or climb; sure, there are a few physical and social scientists that go as well, but they are small in number compared to the first two groups. Prior to the mid-20th century, the opposite was true. Most of the Westerners who went into the Karakoram-Himalaya were there for science and surveying, not for mountaineering.

Over the course of the last two centuries, Westerners have ventured into these mountains for various reasons. I have derived four classifications; although this is not a definitive list, it will suffice to illustrate that not everyone who ventured into the Karakoram-Himalaya had the same purpose or goals. There are: travelers, sportsmen, surveyors/scientists, and finally the trekkers/mountaineers.

Travelers were people who generally moved through the mountains but were not particularly interested in the mountains themselves. I would put merchants who were conducting business from northern India or Nepal into Tibet (or vice-versa) into this category, as well as missionaries and politicians. The latter two groups were typically from India and were headed into Chinese Turkestan or southern Tibet.

Sometimes these travelers would write about their adventures, providing a tantalizing glimpse into the mountains they had crossed and the peoples they had encountered. Some of the earliest-known accounts of Western travelers were missionaries who trekked from India to Tibet in order to spread Christianity or make connections with small communities of Christians that were rumored to live there. There were of course countless political agents who operated in the area during the 19th and early 20th centuries, a period known as the 'Great Game.' This 'contest,' between Russia, Britain, and to some degree China, was played in order to see what nation could exert a strong influence over the lands of Central Asia and Tibet. By the mid-19th century, the British Government in India sent out numerous surveyors in order to ascertain the unknown peaks and passes that formed the northern border of their colony. It was of strategic value to know where an enemy army (the Russian Army had been expanding south through Central Asia) could slip through the mountains and enter India proper.

Hence the use of Indian-born surveyors who became known as 'pundits'; their mission was to gather clandestine information on the geography of the mountainous regions that were outside the control of British India as well as southern Tibet. Pundits were essentially a hybrid between political agents and explorers, with more of an emphasis on exploring. As it turns out, most of the terrain they explored was in southern Tibet. Yes, they did explore various passes through the Karakoram-Himalaya, but they—for the most part—did not penetrate the remote regions of these ranges and their surveying was extremely basic but of considerable value at the time. For readers interested in learning more about the exploits of the pundits, see P. Hopkirk's *Trespassers on the Roof of the World* (1982) as well as Appendix C in D.W. Freshfield's *Around Kangchenjunga* (1903), where he reprints the notes of Chandra Das when the pundit was traveling in western Nepal. A short but comprehensive article was written by M. Ward (*The Alpine Journal*, 1998).

The second category consists of adventurers. In the early 19th century, these would have been British hunters ('sportsmen' as they were called), roaming the valleys and hillsides of the central Himalaya, Kashmir and mid-Indus Valley in search of ibex, bharal, tahr, and the like. These were typically British officers serving in the Indian Army who were on leave, or government officials on holiday. By the late 19th century, a few individuals started to head into the mountains to climb—Charles Granville Bruce and his wife being good examples. Bruce, whose name will appear throughout this narrative, was an officer in the Indian Army and lived in Kashmir for many years; he also had a love for big-game hunting. As a result, he spent a lot of time wandering through and over the top of the rugged terrain of northwest India. Some of the experiences and findings of the adventurers were passed on verbally, but only a small amount was properly documented.

The third category consists of the surveyors and scientists, which I have combined together as they had similar objectives—to penetrate and map unexplored regions as well as catalogue and explain undocumented phenomena in the world around them. As it turns out, it was this group that constituted the majority of personnel that penetrated the most rugged terrain and isolated regions within the Karakoram-Himalaya. The greatest part of this story covers the exploits of this last group of men and women. These were the folk who literally put the Karakoram and Himalaya on the map. These were what most would call explorers.

The fourth group consists of mountaineers and trekkers. From the late 19th century through to the 1920s, there were a few pure mountaineering expeditions, but momentum for these types of adventures increased in the late 1920s and early 1930s. Expeditions in this early period typically lasted from three to five months and were expensive. World War II put everything on hold, but by the late 1940s momentous changes had occurred. Nepal opened its doors to outsiders and Tibet closed down due to the Chinese invasion. The 1950s and early 1960s were the heyday for big national expeditions, which of course is when the fourteen 8,000-m peaks were climbed (it is interesting to speculate why they were all climbed during this period; for a discussion see Chapter 33). And by the late 1960s, with the global boom of commercial aviation, the trekking industry was born—and with it the beginning of mass tourism into the Karakoram-Himalaya.

It is imperative to keep in mind that this vast region, which will be described shortly, was not explored simultaneously or even over a couple of decades. Some areas have been open for exploration by outsiders for centuries, while others—due to political reasons—were off-limits for extended periods of time. The Western Himalaya as well as the Karakoram were the first areas to be explored by the

British in the Indian subcontinent because of course they controlled greater India (recall that India was much larger at that time then it is today). By the late 19th and early 20th centuries, Sikkim was explored. Nepal held out for the most part until the late 1940s due to its self-imposed isolationist policy. The Eastern Himalaya was the last region to be explored in detail; Bhutan saw a few Western travelers at various times in the first half of the 20th century but did not really open up until the 1960s. Even now, however, mountaineering there is no longer permitted. The very eastern tip of the Himalaya was explored in the 1910–30 period but mountaineering there did not commence until the 1970s. Hence, in the title "the explorers of the Karakoram-Himalaya," the period in question actually spans about 100 years. In general, detailed exploration commenced in the west and over the next 100 years moved eastwards.

Rock and Ice

We all learned at some point in our schooling a bit about the wonderful world of plate tectonics. In the present context, the Himalaya and Karakoram ranges as well as the Tibetan Plateau are a result of the collision of two continental plates; over geologic time the Indian Plate has moved north-northeast and smashed into the much larger Eurasian Plate. The boundary of this collision is characterized by the folding and metaphorizing (re-melting) of older rock tens of miles below the surface, including rocks and sediments that used to lie on the sea floor. All of this material has been thrust vertically over the eons, resulting in a complex array of rock types: igneous, sedimentary, and metamorphic found at any and all elevations. In simplistic terms, the highest peaks are composed of granite (igneous) and gneiss (metamorphic with distinct layering), with most—but not all—of the sedimentary rocks lying on the periphery (north and south) of the great ranges. Modern measurements of the height of these mountains indicates that they are still rising at a rate of a few to about 10 mm (one sixteenth to a third of an inch) per year.

Despite a large mantle of ice and snow, Mt. Everest displays a cornucopia of geologic rocks: for example, the upper tip of the mountain is composed of yellow marble (the Yellow Band) and above sits a layer of gray limestone. Both of these rocks were ultimately produced by marine sediments millions of years ago (at least a few years prior to my starting to write this book).

The valleys we see today are the result of the rivers which have been able to carve down through the rock and sediment at a rate significantly faster than the same material has been lifted in the

mountain-building process. The interesting characteristic of these rivers, which are the life blood of Pakistan, northern India, and Bangladesh, is that many actually traverse or cut through the main axis of the mountains. A glance at a map or satellite imagery will clearly show this feature. The Kali Gandaki Gorge of central Nepal is a prime example; the valley is often considered the deepest on Earth (excluding marine trenches), running between Dhaulagiri and Annapurna, and is roughly 18,000 ft deep. It runs north-south nearly perpendicular to the axis of the tallest mountains in this region, which are roughly on an east-west line. The depth of these river valleys is not strictly due to erosion—they reside on fault lines as well.

The erosional power of these rivers is a mixed blessing, depending on where you live. Heavy rain and river runoff erode precious soil from the small fields located on the slopes of Himalayan valleys, but for those living hundreds of miles downstream, this same material is deposited when the rivers widen and slow down. New deposits provide a much-needed boost in the nutrient levels of the depleted soils in the North Indian Plain. The other interesting fact about the rivers in this region is that three of the greats: Indus, Sutlej (one of the major sources of the Indus), and Tsangpo (called the Brahmaputra when it flows south of the Eastern Himalaya), have their respective headwaters in very close proximity to each other. This auspicious location is in the environs of Lake Manasarovar (called Mapam Yumco on modern maps) some 15,000 ft high on the southern edge of the Tibetan Plateau, roughly 100 miles north of the intersection of the borders of western Nepal, India, and Tibet. Unlike most lakes on the plateau which are salty, this one is fed from glaciers in the nearby Gandise Mountain Range (home to Mt. Kailash), and hence it is composed of freshwater.

All three of the aforementioned rivers and their many tributaries cut through the mountains. The Indus runs northwest from Tibet before making a sharp turn to the south near the northern flanks of Nanga Parbat (Map 1). The Ganges and all of its northern tributaries drain the western and central Himalayas from Himachal Pradesh to eastern Nepal. The Yarlung Tsangpo River flows some 700 miles eastwards across southern Tibet before making a sharp turn to the southwest, after which it flows through the Indian states of Arunachal Pradesh and Assam. From here, this mighty river traverses Bangladesh as the Brahmaputra River, and finally reaches the ocean via the Bay of Bengal. The headwater of the Ganges River (Ganga) is disputed by geographers; however, all potential candidates for this honor reside in the central Indian Himalaya (Garhwal) and flow southwest before making the turn to the southeast and flowing across the North Indian Plain.

The Himalaya Range as we know it today is bookmarked in the west by the Indus River near Nanga Parbat, and in the east by the Tsangpo Gorge. There are plenty of mountains to the east, west, and north, so how did the powers that be come up with these boundaries? There is evidence from structural geology in the vicinity of Nanga Parbat that makes the Himalaya in this extreme western part distinct from the eastern Hindu Kush Range or the Karakoram which are adjacent. To a casual observer, however, there is no apparent distinction; it all looks similar.

The issue in the Eastern Himalaya is not quite so clear-cut, but once again it appears that deep folding of the crust to the south of the Tsangpo Gorge indicates a separate geological unit. There is plenty of climatic and biological overlap between the edges of the Himalaya and its mountainous neighbors. To a non-geologist, the boundaries appear to be determined strictly by the zigzagging course of its rivers. (For some interesting arguments on why the Himalaya might actually extend farther to the east, see the 1934 article by F.K. Ward, "The Himalaya East of the Tsangpo," *The Geographical Journal*, Vol.84, No.6, pp.369–97. Also see D.N. Wadia's "The Trend-Line of the Himalaya," *The Himalayan Journal*, Vol.8, 1936. For travel information, "Expedition to Eastern Tibet, 2009," *The Himalayan Journal*, Vol.66, 2010.)

One thing is for certain and that is the application of the term 'Himalaya' to the entire length of the range is a European construct; prior to the arrival of the Europeans in the Indian subcontinent, no local would call the entire range the Himalayas. The term is from the Sanskrit: 'hi-ma' means 'snow,' and 'a-la-ya' means 'abode,' the 'abode of snow.' Before the arrival of Europeans, the speakers of the many local language groups used the term 'himala' or 'himal' to refer to a cluster of snow-covered mountains. The term is still used to this day in this same context by most local inhabitants. (For a brief history of the term 'Himalaya,' see *The Himalayan Journal*, Vol.1, "The Word Himalaya" by G. Corbett.)

The Himalayan Range as defined today is some 1,500 miles in length, forming a broad arc opened to the north. Its eastern edge lies in southeast Tibet, very near the border with the Yunnan Province. It then extends southwest through Arunachal Pradesh, then west through Bhutan, Sikkim, before starting to arc to the northwest in Nepal. It continues on a northwest trajectory through all of the northern India states (Greater Kashmir) into northern Pakistan.

Although the term 'range' was used, it is actually composed of many subranges running parallel to each other. The number and names of these subranges vary: four or five are most often quoted. There are the foothills (sub-Himalayas, Siwalik) lying just north of the Gangetic Plain of India. Farther

north is the Lower Himalaya (Pir Panjal is an example), followed by the Higher Himalaya and then the Trans Himalaya (Kailas Range, Aghil Range) which lie on the southern boundary of the Tibetan Plateau. There are geologic differences between these subranges, with plenty of faults running this way and that; but for non-geologists, these are not evident. This region is of course very tectonically active due to plate convergence; earthquakes are common, and often deadly.

Within the Himalaya there are clusters or groupings of the highest peaks, such as those around Kangchenjunga, Mt. Everest, as well as Annapurna-Dhaulagiri. The Karakoram is more compact than the Himalaya but nevertheless there are identifiable mountain clusters as well.

Authors, explorers, climbers, and travelers over the past several hundred years—to add to the nomenclature confusion—have referred to the highest peaks as the 'Greater Himalaya.' Some of the highest peaks are located on the southern edge of the Tibetan Plateau—Mt. Everest, for example—while others lie a few-dozen miles to the south, like Annapurna and Dhaulagiri. In the case of Mt. Everest, the international border runs through the summit, with the northern glaciers (Rongbuk) extending down onto the Tibetan Plateau.

If you were to peruse a wide spectrum of literature on the subject, you would find that some scientists, geographers, and writers in general combine the Karakoram with the Himalaya, while others do not. Most modern writers separate the two ranges but the earlier explorers use a mix of names. In addition, many geographers and scientists today refer to the larger region as the 'HKKH': Hindu Kush-Karakoram-Himalaya; it is essentially one massive range with many sub-parts. I will use either 'Karakoram-Himalaya' to refer to the combined mass of the Karakoram and Himalaya, or the individual range name when appropriate. [Sometimes HKH is used which refers to: Hindu-Kush Himalaya, with the Karakoram understood to be a subrange of the Himalaya]

'Karakoram' is a Turkic word which means 'black gravel' or, according to Dr. Thomas Longstaff, "black splintered stones." It appears that this name was first used circa the 1820s by Moorcroft, who learned it from his Kirghiz guides (the Kirghiz are Turkic peoples, some of which live on the eastern edge of the Pamir Plateau and Central Asia). Many people have grumbled over the years that the Earth's greatest concentration of high and rugged peaks has such a common, unimaginative name. We can only speculate but it is plausible that 'black gravel' refers to the extensive high-altitude plateaus that form the eastern boundaries of the range, which have surface deposits of gravel that has a black tint. It has been suggested that the name was taken from the Karakoram Pass and applied to the entire range––by

local inhabitants or Westerners, no one knows. In the late 1920s and early 1930s, there was considerable debate on the term 'Karakoram' and its application to the range, as evidenced in "Nomenclature in the Karakoram," by Kenneth Mason in *Geographical Journal*, Vol.76, No.2, August 1930, pp.143–7, and discussed on pp.148–58.

Up until the mid-20th century, local inhabitants would not have referred to the range as the Karakoram, they would have only been interested in their local topography (subranges) rather than looking at the big picture. Like the Himalaya, the Karakoram can be sub-divided into various ranges, often called 'muztaghs.' In fact, beginning around 1880, there was a push by certain geographers and explorers to refer to the Karakoram as the 'Muztagh'; it was never adopted by the authorities. In fact, the term 'muztagh,' which is Turkic for 'ice mountain,' is used extensively by various Turkic peoples to refer to any snow-ice-covered mountain.

The Karakoram are a relatively compact mass of mountains lying to the east and northeast of Nanga Parbat (Map 2). They arc from the northwest to the southeast for only about 360 miles, the north-south breadth is about 100–150 miles. Hence the Karakoram are bounded on the southeast by the Indus River, on the south by the Ladakh Range, on the east by the Pamir Plateau where it meets the Tibetan Plateau, on the north by the Pamirs, and to the west by the Gilgit River. In reality, the mountains of the Karakoram merge with both the Pamirs of the Wakhan Corridor to the north and the mountains of Chitral to the west. This western boundary (74^{o} meridian) is often sighted as the eastern-most extension of the Hindu Kush. Once again, to a non-geologist there is no large-scale difference in the surface appearance of the mountains that warrants the boundaries to be located where they are.

One interesting difference between the Himalaya and Karakoram is that in the latter the major rivers tend to flow parallel to the main axis of the range, not perpendicular as is the case for most of the Himalaya. In addition, most of the Himalaya was initially heavily forested at lower and mid-elevations (minus human deforestation); the Karakoram in contrast is a stark environment, rock and ice, not much else. There are some valleys where small stands of forest can be found, and most of the inhabitable land is located on alluvial fans; these are large accumulations of mud and rock that have flowed out of the higher mountains during mudslides. These fans also contain streams, either on the surface or just below, which allow for crop irrigation in an otherwise desert-like climate.

Another striking difference between the Himalaya and Karakoram, ignoring the size differential, is readily apparent when you look at a map or satellite imagery: glaciation. The Karakoram supports

significantly more glaciation than the Himalaya. The longest glacier in the Himalaya is the Ngozumpa Glacier at 22 miles, and it is located on the south side of Cho Oyu. The Khumbu Glacier on Mt. Everest's southwest is about 10.2 miles in length, while the Rongbuk Glacier on the north side is about 11.2 miles. The longest in the Karakoram in comparison is the Siachen at 47 miles (408 sq. mi.), and there are four more that exceed 30 miles in length: Baltoro, Batura, Biafo, and Hispar. (Estimates of length and area depend on the database used, dates when surveyed, and methodology.) In fact, the Hispar-Biafo glaciers are linked at the Hispar Pass, making for a 69-mile-long continuous run of glacial ice—the longest outside of the polar regions. Overall, the area covered by ice is about four times larger in the Karakoram than in the Himalaya, which considering the difference in size of the two ranges is even more profound.

A number of studies over the past twenty years have indicated that the majority, but not all of the glaciers in the Himalaya and most of those in Tibet are either thinning or receding, or both. The degree of glacier melt varies from region to region. In the Karakoram, a study published in 2014 (Rankl et al, also see Fainotti, D., 2020) indicated that the majority of the glaciers were in stasis (equilibrium) at that time; some were retreating but a number were advancing. Another study in 2012 (James and Bush) found that despite the fact that air temperatures were increasing over the Karakoram (as elsewhere), precipitation had also increased. Since the majority of precipitation that falls at the higher elevations is snow, it is possible that the region is actually gaining ice at the higher elevations; hence glaciers in the Karakoram are either in equilibrium with the warmer climate or advancing slightly. The increase in precipitation is a result of changes in the large-scale weather patterns. In the drier regions of the Karakoram-Himalaya, meltwater derived from glaciers is extremely important; to say that it is the life blood is not an exaggeration in any sense.

Much of the Karakoram is uninhabited due to its high percentage of glaciation. The main centers of habitation are the Hunza Valley and Baltistan. The Hunza River is the life blood of the Hunza Valley, and the main town today is Karimabad (Baltit of old). The important transportation hub of Gilgit lies just to the west of the Karakoram; in reality, the Gilgit River on which the small city is located is the dividing line between the Karakoram and the Hindu Kush. Baltistan, the other major concentration of towns and villages in the Karakoram, lies to the south of Hunza and straddles the Indus and Shyok rivers. The main metropolis is Skardu. Northern Ladakh forms the southern boundary, although this area is also sparsely settled as well.

A separate mountain assemblage which is considered distinct from the Karakoram is the compact and rarely visited Aghil Range. It lies entirely within China (Tibet) and is just to the northeast

and east of K2 and the Gasherbrums. It is sandwiched between the Shaksgam River to the west and the Yarkand River to the east. It is only about 50 miles in length (northwest–southeast orientation) and roughly 25 miles wide. There are no villages in this range, and although it is downstream of the Karakoram with respect to the supply of moisture (precipitation shadow)—due to the fact that the jet stream flows from west to east—it supports a healthy glacial system. The highest peaks range to roughly 21,000 ft. During the first three decades of the 20th century, the Aghil Range attracted a number of prominent mountain explorers, as will become evident in later chapters.

Weather and Climate

The disparity in glaciation between the Himalaya and the Karakoram is primarily a result of another significant difference: climate. Most of the Himalaya lies in a monsoon zone, while the Karakoram and northwestern tip of the Himalaya lie in a mix between a mid-latitude climate and a monsoonal one. The South Asian monsoon (there is a distinct East Asian monsoon as well) is a two-season affair: from October through May the predominant weather pattern over India is winds which move out of the north—that is from Tibet; they are very dry and cool when compared to the summer flow. This pattern switches sometime in May or early June, when strong, low-level winds over the Indian Ocean move on shore. Moist southwest flow hits the southern coast of India, generating very heavy rain. In the Bay of Bengal, the winds turn to the northwest and by the time they reach Bangladesh and West Bengal, they are from the south-southeast. The eastern part of the Bay of Bengal is one of the wettest locations on earth. How wet? There are locations which average around 470 in. of rain per year. These same moist winds transport rain and snow to the North Indian Plain and Himalaya. The onset and termination of the summer monsoon is not fixed in time; it can vary by up to four weeks from one summer to the next.

The moisture actually moves northward as impulses—think of it as individual storms imbedded within the nearly constant monsoon flow. These impulses last from a couple to ten or more days. In between the impulses, there are often a few dry days, which are referred to as ‘monsoon breaks.’ In some regions, there is a distinct diurnal pattern; the mornings are dry sometimes with little cloud cover, but rain develops by early afternoon and continues through the first half of the night. In general, the wettest regions tend to be the Eastern Himalaya with diminishing precipitation to the west and north. Hence, the mountains of Bhutan, Sikkim, and eastern Nepal receive the brunt of the moisture; in contrast, regions like Mustagh and Dolpo in northwestern Nepal remain quite dry, and hence have an

arid climate. Freezing levels (or snow levels) during the summer monsoons varies, but at higher elevations the vast majority of annual snow accumulation occurs from May to September, not during the winter. Therefore, virtually all of the high-altitude mountaineering takes place in either the pre-monsoon (April–May) or post-monsoon (October–early November). Of course, in recent decades some hardy souls have taken to climbing during the winter, but it adds a degree of difficulty due to the extremely cold air temperatures; and when a storm does hit the region this time of year, it is not a good recipe for success or survival.

The summer monsoon extends into the Indian Himalaya (Uttarakhand, Himachal Pradesh, Kashmir) as well; and like Nepal there is a drastic reduction in the amount of precipitation that falls on the northern parts of the range. For example, the Pir Panjal Range receives a significant amount of rain and snow; 50–70 miles farther north in Ladakh, the climate is arid.

The climate of the Karakoram and northwestern tip of the Himalaya (around Nanga Parbat) tends to be controlled by a different mechanism than just described for the monsoon. The large-scale strong winds which circle the globe are known as the 'jet stream' (there are multiple jet streams, which vary in location and intensity). During the winter, when the jet stream is at its peak intensity, it tends to reside in a zone between 30°–40°N over this part of Asia. The jet stream steers large-scale storm systems from west to east. The Karakoram are positioned around 36°N, hence these imposing peaks lie under this zone of strong winds and consequently the storm track. What this means is that the bulk of the rain and snow that falls over the region tends to occur from October through April; hence most of the climbing occurs during the summer months.

However, if you have visited the Karakoram or have read various mountaineering accounts you should know that there is plenty of inclement weather during the summer as well. It is not unusual for a summer storm to drop feet of snow at higher elevations. Many of the early explorers to the Karakoram found this out firsthand. One of the most interesting aspects of this manifests itself in the fact that the valleys in the region are extremely dry. In towns such as Gilgit and Skardu—where routine weather observations have been taken for over a hundred years—the annual precipitation (rain and snow water equivalent) is on the order of 4–6 in. (10–15 cm). Yet the nearby mountains support massive glaciation; this appears to be a conundrum of monumental proportions, so how is it possible?

A few meteorological studies conducted in recent years indicate that the higher elevations of the Karakoram received considerable amounts of precipitation, ten to fifteen times what is measured in

the valleys. In addition, at these elevations almost all of it falls as snow. The summer melt season, although it is intense, is also quite short in duration. Hence snow and ice can accumulate from one year to the next. Another factor that supports massive glaciation is that the steep slopes of these mountains shed the majority of snow they receive. Avalanches are numerous and can be massive, so the snow that falls at the highest elevations often slides down a few thousand feet to nourish the many glaciers. Rain and snow that does fall out over valleys generally evaporates (or sublimates) before hitting the ground because of the very dry air that is trapped in these valleys. Essentially, the mass of the Karakoram protruding into the atmosphere as it does, modifies and intensifies the weather systems that move in from the west; as a consequence, very little moisture makes it downstream of the Karakoram into Tibet.

The question then arises, does the South Asian monsoon impact the Karakoram? There have only been a few studies that have attempted to address this issue, and it was certainly raised by early explorers like the Workmans. The best answer is that it does at times, but in not the same degree as in the Himalaya. The summer storms that hit the region are either disturbances embedded in the western flow and are intensified as they are forced up and over the Karakoram, or monsoonal flow that is strong enough to push that far to the north. It has been estimated that at the highest elevations in the Karakoram, some two-thirds of the snow that falls occurs during the winter, with the remaining one-third during the summer months (Hewitt, 2005).

We have just discussed the fact that there is a lot of horizontal heterogeneity in the Karakoram-Himalaya due to variations in air temperatures and precipitation. These of course also change according to elevation; in fact, they change faster in the vertical than they do in the horizontal. If you trek up the slopes of a large mountain, for example in Sikkim, what would you find? The ecosystems (biomes) change quit rapidly with elevation. At lower elevations, there are dense sub-tropical forests, followed by forest of hardwoods (oaks, chestnut), bamboo, and rhododendrons. Higher elevations give way to sub-Alpine flowers and grasses which eventually transition to the Alpine zone, mainly rock, snow and ice. All of these within a vertical range of about 13,000–15,000 ft, a distance less than 5 miles. The stratification of ecosystems with elevation is a result of changes in precipitation and air temperature and to a smaller degree, atmospheric pressure and hence the availability of oxygen.

One of the key concepts in mountain meteorology is that air cools as it rises; a closely related point is that in general air temperatures are warmest at sea level and cool with an increase in elevation. The rate at which air cools with a given change in elevation is not absolutely fixed but it typically ranges

from 3°–4.5°F per 1,000 ft. It is not hard to see that if your trek from 4,000–14,000 ft over the course of a few days, the air temperature is going to cool 30°F to possibly as much as 45°F.

One interesting side note that early explorers and mountaineers to the Karakoram-Himalaya reported was how warm they would get when traversing a glacier or large snowfield on a sunny day; even if they were at 19,000 ft. This seems to violate the change in temperature with elevation rule just discussed. In reality, it doesn't; there are a few exceptions such as temperature inversions—which mainly occur in valleys—but for the case of explorers on a glacier, there is another issue involved. On a clear day when the sun shines down on a glacier, a large percentage of that sunlight is reflected back towards the sky (snow has a high albedo). A climber standing on that glacier absorbs a large amount of sunlight, which then of course tends to make them feel warm; they absorb the direct sunlight, plus a significant portion of the sunlight that is reflected from the ice/snow. The air temperature has warmed but not as much as the climber thinks it has. If the sun goes behind a cloud for a few minutes, they will note what appears to be a very sharp drop in temperature. In reality, the air temperature has changed very little, if at all; the perceived decrease is due to the reduction in the amount of sunlight absorbed by the climber. The amplification is enhanced even further when a person is in a glacial basin or icefield; the concave nature of the terrain reflects even more sunlight towards a climber. The Western Cwm on the south side of Mt. Everest is often reported to be like an oven on clear days in May.

One of the main takeaway points is that there exists an extreme variability in precipitation and air temperatures over very short distances, horizontally and vertically in both the Karakoram and Himalaya due to the high elevations and steep nature of the terrain.

As the following narrative unfolds, we will meet a cast of characters, many who were interested in measuring and quantifying the weather, geology, and glaciology of this region in conjunction with other scientific pursuits. Before the physical and biological sciences could be tackled, the little matter of geography had to be settled. Most of the Karakoram-Himalaya was totally unmapped as late as the mid-19th century. Europeans had traveled around, of course, but there had been no concerted effort to survey the region and to produce maps. The earliest Europeans to venture into the more remote and inhabited regions were professional surveyors from the Survey of India (British and Indian). When the earliest expeditions started to penetrate the mountain bastions, their primary motivation was to explore the unknown and conduct topographic surveys. It should be noted that many of the early expeditions

were typically funded by private means. In other words, they were not paid by or commissioned by a government entity. Some did receive partial funding via government channels, but most had to rely on monies coming in from philanthropists, Geographical and Alpine societies as well as academic sources. Along with terrestrial surveying, expedition personnel often collected rock samples, took notes on glacial structure, set up weather stations, collected flora, conducted anthropological studies, etc. It may be a bit of a surprise to some readers, but only a few of the earliest expeditions went off trail purely for the joy of mountaineering.

Chapter 2

Surveying—How Hard Can It Be?

Since surveying the rugged terrain along with various scientific endeavors was what often drove many to leave creature comforts behind and venture into the great peaks and glaciers of the Karakoram-Himalaya, it is imperative to have an understanding and appreciation with regards to what surveying involved in the Karakoram-Himalaya prior to World War II. Surveying in the mountains is not as easy as it may seem to non-practitioners; conditions in which this work was conducted were extreme. Not only did the equipment have to be carried to a lofty elevation in some remote location, hundreds of miles from the nearest road, but the person looking through the theodolite (survey telescope) often had to wait hours or days for the right conditions in order to lay an eye on the treasured summit of some elusive peak that was on the distant horizon.

Determining the heights of mountains was just one aspect of surveying; drawing maps and getting the lie of the land was another. This entailed surveying the position of glaciers, rivers, and villages. The pundits of the Great Game conducted crude surveys as they walked many hundreds of miles over rough terrain. They were trained to count each of their steps in order to determine distance from a known point, as well as relative distances between various features that lay along their route (see below). However, it was really up to the professional surveyors to gather enough high-quality data so that a map could be produced. The first surveyors were sent out directly from the Survey of India on their own 'mini-expeditions.' By the early 20th century, the bulk of surveying was implemented by members of private expeditions, and in many cases by surveyors from the Survey of India, who were on temporary assignment with these private expeditions.

The tools for determining height of a summit fell into two categories: either measuring it from a distance—today we call this remote sensing—or climbing to the top and measuring some other property from which the elevation could be determined. The latter usually involved measuring the atmospheric pressure or boiling point of water. Today, one would use a GPS unit. It is important to keep in mind that the heights of all of the great peaks are not necessarily static; they are typically covered in snow and ice, and hence the height changes from season to season or year to year as snow/ice conditions change. Beware of too precise measurements; within a few feet is good enough unless you are dealing with a solid rock surface. As noted in the previous chapter, the mountains are for the most part still rising. An

average height of increase of 0.2 in. (5 mm) per year will yield an increase of 19.7 in. (0.5 m) over a hundred years.

Besides determining elevations, surveyors would need to fix their latitude and longitude, which they typically did using astronomical methods. They could also determine latitude/longitude by sighting a recognized mountain where the coordinates were already known, and then determine the distance and azimuth direction form it to their current location, from which they could calculate their latitude/longitude. In the foothills of the Himalaya, where peaks were relatively accessible, one team would carry the theodolite to the summit of a mountain, while a second team would take a heliotrope (mirrors that reflect sunlight back to the sighting telescope) to the summit of a nearby mountain. The surveyors would then zero in on the reflection of the sun off of the heliotrope. If cloud cover inferred with the use of the heliotrope during the day, night observations could be made as well; a lantern would be lit on the summit. This method made it easier and more accurate, as the measurement was taken from the precise summit and not just along part of a summit ridge.

What follows is an outline of how the survey of a major Himalayan peak was conducted. The surveyor would of course find a location from where the summit of the mountain of interest was visible. They would set up the theodolite and begin to make horizontal and vertical angle measurements. Setting up the theodolite sounds easy, but it's not as simple as it would appear. A theodolite is essentially a telescope which is mounted on a small armature that allows both horizontal and vertical angles to be measured. The instrument has to be perfectly level with respect to the surface of Earth. A plumb bob (or spirit level) was used to find the direction to the center of the Earth, hence a plane 90^{o} from that represents the surface of the Earth. If the instrument is not level, then the vertical angles will be in error. Small errors in the set-up of this equipment (instrument errors) translate into very large errors in the measured vertical angles.

The next step is to sight the actual summit. Once again, the primary summit may be blocked by a secondary peak or intervening ridge, but the surveyor probably does not know this until they start looking through the telescope. This also seems easy but these observations were frequently taken at distances of 50 to over 100 miles, so accuracy was key. And of course, the target may have been obscured by clouds or blowing snow. There are many stories of surveyors waiting for days at high elevations in freezing conditions, for clouds to dissipate so that they could observe a distant peak. One of the best accounts of the triumphs and tribulations of a Himalayan surveyor is Mr. Collins' Triangulation of Teram Kangri; the account can be found in *The Alpine Journal*, Vol.26, pp.307–13.

Once the measurements were made, the data was taken back to the office for calculations. Basic trigonometry says that if you have a right triangle and know the length of the base and the angle, the height of the opposite side can be calculated. However, the distance from the point of the measurement to the mountain must be known. Unlike the survey that was conducted across India where a set of triangles were established, with the horizontal distances laboriously measured by a team of men with a precise metal chain that was 100 ft in length, this of course was impossible in the rugged terrain of the Himalaya. Distance could be worked out if the latitude/longitude of the mountain being surveyed and the station from which it was surveyed were known.

Another solution to the problem of not knowing the horizontal distance to the target was to survey it from two or more known locations (latitude/longitude and elevations known). If the distance of the base line between any two stations is known, then using the Law of Sines and the measured azimuthal angles, the two unknown sides of the triangle can be calculated. This will yield the distance from the surveyor to the peak of interest. Then using the observed vertical angle and the recently derived distance, the height can be calculated.

Best practices meant that measurements were repeated from at least a handful of different locations for one mountain, and then averaged. There are, however, additional sources of error besides measurement error, such as the theodolite was not level, or the surveyor did not sight the actual summit, but a secondary point on the ridge. One of the primary culprits is atmospheric refraction. Refraction is the bending of light rays as they travel through an atmosphere in which air temperature and density change with height. In essence, refraction makes a light ray appear to be where it is not, which introduces an error into the measured vertical angle of a peak.

Once a surveyor had returned from the field, 'calculators,' the folks who took the raw data and then made the calculations, would have to 'correct' the observed value for refraction. As it turns out, refraction is a function of the elevation at which the observations were taken. For example, if one observation is taken at 5,000 ft, elevation over a distance of 75 miles and the next observation is from 18,000 ft over 43 miles, even if they are made at the same time, the refraction corrections will differ. In addition, refraction is a function of time of day and season, and it can throw off values by 500 ft in the vertical.

It also became apparent, when surveyors started to take observations of the Himalayan giants from the summits of the peaks in the foothills, that something was amiss besides refraction. It turns out

that the mass of a mountain range causes a slight deflection of a plumb bob when it is suspended from a tripod. Hence another correction may be needed to allow for the fact that the instrument is not perfectly level with respect to the surface of Earth. Several of the large expeditions of the early 20th century to venture into the Karakoram and central Himalayas had the objective of measuring gravimetric deviations. The corrections for gravimetric deviations within the mountains are difficult to apply and were not used on the observations taken in the 19th century. Only later was this correction factor applied.

But wait, there is an additional issue—Earth is not a sphere, it is an oblate spheroid. The circumference of Earth around the equator is 42 miles greater than the circumference around the North and South Pole. In addition, the surface of Earth contains many mountain ranges as well as many trenches and valleys. All of this matters when you go to figure what the value of mean sea level is, which is what all elevations are based on. So, after large peaks had been surveyed, the calculators had to know what the deviation of their local geoid surface was from the surface of the oblate spheroid, and then add or subtract that value from the calculated value.

The tallest peaks in the Karakoram-Himalaya were first surveyed from afar—usually the foothills to the south, at distances ranging from 75–125 miles. By 1875 or so, most of the tallest peaks had been 'discovered' and their heights were known with varying degrees of accuracy. This, however, was only the very smallest tip of the surveying iceberg; the real work was only just beginning. Surveyors had to trek into these regions with the appropriate equipment and survey everything in sight in order to produce maps.

Mt. Everest will serve as our example of how a mountain's height was determined back in the day. The peak was surveyed twelve times between 1849 and 1902, from eleven different stations (one station was used twice). These stations ranged in elevation from 219–11,929 ft. The horizontal distance of these stations to the mountain ranged from 85.5–118.7 miles. The measured heights (raw observations which are not corrected) ranged from 29, 572–30,366 ft. After corrections for refraction, geoid height, and the deviation of gravity were made, the values were averaged; the published value in the late 19th century was given as 29,002 ft. It is interesting that the chief surveyors for the Survey of India in 1908, Burrard and Hayden, note that they were not very confident in their refraction correction factor. The precise nature of the work, given the difficulties I have outlined above, is a testament to the quality of surveying that this group performed with 'low-tech' equipment.

In 1956, a little over 100 years after the first survey of Mt. Everest was undertaken, another survey was conducted. It resulted in a refined value of 29,028 ft—a difference of only 26 ft from the original value. The mountain has been measured a number of times since 1956, resulting in various values. A Chinese team took measurements from the summit rocks, which seems the most logical if one wants a focus in a precise number, and then allows for seasonal snow-ice formations. There is also some discussion in the scientific literature that large regional earthquakes, like the 2015 event in Nepal, might possibly alter the heights of mountains as well. In late 2020, a joint Chinese-Nepalese press release stated that the newest measured height of the mountain is 29,031.69 ft (8,848.86 m). No one knows whether the increase in height is due to gradual uplift, shifts during earthquakes, or due to more precise measurements, or a combination. It is interesting to note that the released measurement of 8,848.86 m is supposedly precise to a hundredth of a meter (1 cm, about a third of an inch)! Sorry, but there is no way that such a precise value can be obtained for a snow-ice-covered peak which is constantly changing due to wind deposition or erosion. This is a case where the tech geeks diverge from reality.

One of the instruments in the toolkit of early surveys and often mentioned by the likes of Longstaff, the Workmans, Shipton, and even Bill Tilman (with disgust at times), was the plane-table. Essentially, it was a portable board or table where a large sheet of paper or a map was attached. The surface of the table was made perfectly level with respect to the surface of Earth, as described above, using a plumb bob. In the middle of the table was alidade or theodolite. The maps or paper was oriented with respect to some known reference feature. The height of the table with respect to the mean sea level had to be determined if not already known (barometer or boiling-point readings). The surveyor would sight a distant mountain and measure the azimuthal angle (bearing) from the reference line, and then the vertical angle. In general, all of the observations would be noted on the paper and then the details would be worked out after the expedition had been concluded. A simplified version of plane-table surveying consisted of the surveyor making compass bearings and noting these on the map. In this case, there was no attempt to make vertical angle measurements (heights).

A word regarding the Survey of India and the Great Triangulation Survey (GTS) is in order, since it ties in with this discussion. The first survey of the lands occupied by the English East India Company was in Bengal in 1767 under the direction of James Rennell. By 1800, the GTS ramped up its effort by starting an ambitious program in the south of India. A lot of good work was carried out under the direction of Lambton, who was the man in charge at that time. After Lambton retired, George Everest took over as the head of the survey. He introduced new equipment and new techniques, including the

gridiron of triangles that eventually covered the entire country. These triangles were on average 31 miles in length (they varied according to terrain); at each corner a triangulation station was established (on flat ground towers were built). Precise distances were determined using a chain, 100 ft in length, laying it out very carefully from one station to the next. Everest's great work was the meridional arc which started in southern India and was extended over the years to the foothills of the Himalaya, north of Delhi. This arc forms the basis of the geoid of India from which all height measurements in the Karakoram-Himalaya are based.

By the mid-19th century, most of the territory of India (as it existed at that time) had been surveyed, minus the mountains to the north. This deficient was rectified beginning in 1855, when Thomas Montgomerie was appointed as the superintendent of the Kashmir survey. Kashmir at that time was much larger than it is today, basically all the hills and mountains north of Lahore. He was the first to triangulate Nanga Parbat and K2 from a peak just north of the Vale of Kashmir called Haramuhk (16,700 ft). When he surveyed K2 in 1858, the mountain was 137 miles in the distance. As we will see shortly, it was Henry Haversham Godwin-Austen who went into the Central Karakoram and undertook plane-table surveying in order to refine and fill in the gaps that a survey from afar could not possibly hope to accomplish.

It was also the impetus of Montgomerie and the training under the leadership of Colonel E. Smyth that established the clandestine survey of southern Tibet and western Turkestan beginning in the late 1850s. For political reasons, the rulers in Lhasa and the Chinese, who were ruling the eastern half of Turkestan, had by the mid-19th century closed their borders to foreigners. These restrictions, however, did not keep the British and Russians from penetrating their border defenses. The solution was to use men from the region that could pass themselves off as merchants from neighboring lands whose only interest was commerce. Another rouse was for these pundits to act as holy men on pilgrimage to the regional holy sites. The word 'pundit' is from Sanskrit and designates a person who was an expert on Vedic law and traditions.

The pundits that the Government of India employed were of various ethnic backgrounds; they often traveled alone but sometimes as pairs. They could be on the trail in Tibet for up to several years. The whole time they were making compass bearings to key topographic features, not only mountains but strategic passes, rivers, lakes, and towns. They would, when possible, measure the boiling point of water or use a small barometer to determine elevations, and they of course counted the number of paces they took in order to estimate horizontal distances. They used Buddhist prayer beads as a

counting tool; instead of the usual 108 beads on a normal string, theirs were constructed with 100, with a subsidiary string of slightly smaller beads whose purpose was to track the number of times the 100 beads had completed a circuit. (There seems to have been several variations of these rosary beads in use over the decades.) After every 100 steps, the pundit would slide along one of the smaller beads.

So, if a pundit had covered the distance from A to B and used 370 of the smaller beads, that would translate into 37,000 paces. He would then make a note of this on a slip of paper or sketch map which of course would be hidden in his clothing or baggage (often in a secret compartment constructed in the top of a Buddhist prayer wheel), and then he would start the count over again for the next leg of the trek. Pundits were trained to walk so that their stride was always the same, no matter whether they were ascending, descending, or traveling over rocky terrain. The length of each pundit's stride may have varied a bit, but as long as each stride for a particular man was consistent, it was a pretty accurate measuring tool. According to Peter Hopkirk, Nain Singh, one of the earliest pundits to venture to Lhasa from northern India, had a stride of 33 in. Therefore, 37,000 of his paces would translate into a distance of 19.26 miles. Although the work of the pundits was important in the late 19th century, they were asked to concentrate on southern Tibet, establishing the latitude/longitude of various towns, the flow of rivers, and strategic assets such as gold fields and other mining operations; they did not survey the Karakoram-Himalaya in the same sense as the professional surveyors did a few decades later. Of course, their lives would be on the line if they were detected, and hence everything was conducted clandestinely. The work of the pundits was one of those underappreciated chapters in the history of exploration; it's surprising that the movie industry has not latched on to these true-to-life adventurers and made a blockbuster based on some of their exploits.

Returning to our timeline of the survey of the Karakoram-Himalaya, the lower elevation terrain of the central Himalayan districts of Kumaon and Garhwal were surveyed in the 1872–75 period (the complete survey spanned 1864–77). Even then, the surveyors were concentrating their efforts on the 'civilized' regions: towns and villages which lay astride the primary tracks. As a result, the first maps published by the Government of India of the region indicated the position and elevation of the highest peaks—like Kamet and Nanda Devi—with some of the populated areas in between these peaks designated as well. But the vast majority of the higher terrain was still not surveyed. As a result of the spotty nature of the surveying, these early maps depicted considerable areas of white space, hence the phrase 'blank on the map' was coined. Sikkim was surveyed between 1878–85, also by the Survey of India, even though it was not actually a part of the Indian Empire, it was a protectorate at that time. The

upper Hunza Valley and terrain around Shimshal Pass was surveyed in 1892 by Lieutenant George Cockerill.

The survey of Nepal was a different matter, as the country was closed to foreigners after the Anglo-Nepalese War of 1814–16. Nevertheless, at various times in the early decades of the 20th century, the Government of Nepal would on occasions ask a team from the Survey of India to conduct some limited survey work within their borders. For example, Captain Henry Wood, from the Survey of India, was invited into Nepal to survey the higher peaks.

In the early decades of the 20th century, there were a handful of British subjects allowed to live in Katmandu, but for the most part their movements were restricted to the Katmandu Valley. Although, from time to time, there were exceptions. As a result, by the mid-20th century the major peaks of Nepal had been mapped and the Katmandu Valley had been surveyed, but there was still a considerable amount of work that needed to be carried out before a detailed understanding of the complex topography was known.

Another small group of unsung heroes of Karakoram-Himalaya exploration were those surveyors whose names have passed into obscurity. They suffered frostbite, sickness, various other ailments, and sometimes death to carry out their missions. They received a small salary from the Government of India, but it was in no way commiserate with what they endured in the field. For a glimpse into the life of a surveyor who worked in the Himalaya, see the article in *The Himalayan Journal*, Vol.11, 1939 by Major G. Osmaston. For a good review article, see: “The Great Game of Mapping the Himalaya,” *The Himalayan Journal*, Vol.65, by R. Sorkhabi.

Previously, the use of barometers to determine elevation was noted; this needs further elaboration, as most explorers and early mountaineers carried some type of barometer in their baggage. Bear in mind that an altimeter is different than a barometer. The latter instrument measures the current atmospheric pressure, which changes with both elevation and as weather systems move across a region (think of this as a change in the horizontal pressure). An altimeter displays elevation based on either the atmospheric pressure (the old way) or a triangulation of multiple GPS signals (the method of choice since the 1990s). If an altimeter is based on *in situ* atmospheric pressure measurements, it is calibrated to give elevation from the measured pressure. But since the atmospheric pressure is just about always changing, up or

down compared to the long-term mean, how do we know that a barometer reading (or altimeter reading) from the top of a mountain is accurate? The short answer is that we don't!

What the explorers did was to note the atmospheric pressure from their instrument, and then after the expedition they would ask for the weather logs from the closest long-term low elevation weather station (Skardu, Gilgit, Leh, Simla, etc.) and see how the pressure at that station compared to the mean value at the same time or closet time compared to the time it was taken on the mountain. So, you can imagine that after a summer of trekking and climbing in the Karakoram-Himalaya, an expedition may have had hundreds of measurements to examine. If the pressure at the weather station was above or below the normal value, then they would have to correct their *in situ* reading as well. I won't belabor this any longer, except to note that atmospheric pressure is a function of air temperature as well. With a pressure-based altimeter, if the unit remains stationary for a period of time but the reading drops over the course of that period, then we know that the pressure has increased, and conversely, if the elevation increases, the pressure is decreasing. Early explorers often carried more than one barometer so that they could take a couple of readings, and/or still have one operable device if one of them was damaged. Nowadays, we have the luxury of GPS-based elevation measurements that are not a function of pressure or temperature. However, they are dependent on the accuracy set by the manufacture. GPS can be very accurate but not all units are capable of using the highest accuracy.

It should be noted that 'surveying,' as used in this text, generally means a survey of the terrain; however, in a broad sense the term includes more than just measuring the heights of mountains and the depths of valleys. There are other types of surveys besides the topographical ones discussed so far. For example, teams of scientists were dispatched into the Karakoram-Himalaya in order to measure very small deviations in the force of gravity as well as deviations in the Earth's magnetic field. Teams also made geological and geomorphological surveys; the positions and size of glaciers were studied.

Another immensely popular area of study and hence survey was botany. From the late 19th century through to the first several decades of the 20th century, tens of thousands of plant species were collected and introduced into Western science. The humanities were not left on the sidelines, either: some expeditions made anthropological (measuring the anatomy of various ethnic groups) and ethnographic surveys.

What's in a Name?

Once a topographic map is produced, then features on the map have to be named. It sounds easy enough, but during the first half of the 20th century there was considerable controversy regarding the naming of prominent features in the Karakoram-Himalaya. Early explorers and surveyors often asked local inhabitants what names they used for the various peaks, valleys, and glaciers. In general, only the most prominent features had local names, and even then, those names were often generic or varied from one particular linguistic group to the next. A common practice, however, was for the local shepherds and traders to name their camping spots and pasturages. Therefore, an impressive 24,000 ft mountain might not have been named by the locals, but a camping ground at its base would most definitely have received a name because they used it with some frequency.

The explorers that you will meet in this book were for the most part sensitive to naming topographic features with local names when possible, although they could not resist the temptation of naming some features after friends, colleagues, benefactors, or themselves. Since virtually all of the area was by the early 20th century under the control of British India, it was the Office of the Survey of India which had the final say in what names would remain unchanged on their official maps and those which would be changed. However, the Survey of India often deferred to the recommendations of the Royal Geographical Society in London. Unlike today, early explorers after their expedition would publish their own maps, in either a book or journal article. Typically, they would go into the field with a map based on the work of the Survey of India or another explorer, and then attempt to refine the details and fill in the blank spots on their maps.

The naming of features in the Karakoram and all of the Western Himalaya during the period of consideration was controversial and came to a head in early 1937. In that year, a conference was held in London in order to find a consensus on naming practices. The Surveyor-General of India was represented by the director of the Geodetic Department but the bulk of the participants were members of the Royal Geographical Society. The whole conference was spearheaded by Kenneth Mason, who worked for the Survey of India and had been researching and collecting map data for over ten years. The conference attendees made certain recommendations but the ultimate yes or no resided with the Surveyor-General. For example, one of the recommendations was that personal names of peaks and glaciers be changed. Many were changed but, in the end, some have endured: such as the 'Godwin-Austen Glacier,' 'Abruzzi Ridge,' 'Tilman Peak,' and 'Savoie Pass' to name a few.

To this day, some peaks and glaciers have retained the names they were first given by Europeans, while many others have been changed by the government of the country in which they reside. For example, just north of K2 is a peak that was named 'Staircase Peak' by the Duke of Abruzzi expedition in 1909; today, its official name is 'Skyank Kangri' ('Kangri' in Ladakhi means 'ice mountain'). Likewise, at the head of the Baltoro Glacier lies a peak formerly known as 'Bride Peak,' which is referred to as 'Chogolisa' today.

These earliest names for the most part were not the names that locals referred to them as, especially in the Karakoram where there are few villages located in the heart of the highest peaks. In fact, the early surveyors just assigned alphanumeric identifiers to the peaks that they could see through their theodolites—such as 'K1,' 'K2,' 'K3,' etc. (As a point of trivia, K1 was assigned to Masherbrum.) Some surveyors used the first letter of their last name; for example, Tanner labeled some peaks as 'T45' and 'T57.'

In many instances, explorers found that there were no local names for topographic features, so geographers, where possible, would assign a name based on the local or regional language. Case in point: 'Disteghil Sar' (25,869 ft) located 10 miles north of the Hispar Glacier translates into 'the sheepfold in the hill.' This was based on the fact that local shepherds have a grazing pasture at the base of the mountain to the northeast. A little farther to the west are 'Momhil Glacier' and 'Momhil Sar' (24,324 ft); Momhil means 'the grazing ground of the old woman.'

Another source of names that was encouraged by the London Conference of 1937 was to name features after descriptors; if, for example, a mountain was very pointed at the summit, it might be named 'pointed' or 'sharp' in the local dialect. If a glacier lacked a covering of surface moraine and hence was very white, it might be called 'white' or 'brilliant.'

The peak that we now identify as K2 was in the original Great Trigonometrical Survey (GTS) referred to as 'Karakuram No.13,.' although it was the second peak surveyed by Montgomerie which in his designation was K2. Decades later, some advocated the name should be changed to 'Mt. Godwin-Austen,' in honor of the 19th-century surveyor. Nevertheless, K2 has of course stood the test of time. Günther Dyhrenfurth, in his short book *Climbing K2*, suggested that the Baltis in the early decades of the 20th century had a name for it, 'Chogori,' which translates to 'big mountain.' It is difficult or impossible to know whether this name existed prior to the interest shown by Westerners or not. K2 is a long, long

way from any Balti village, but on the other hand the mountain is highly visible from great distances, so it is possible that a pre-existing name was in use.

A tall peak on the Nepal-Tibet border was referred to as 'Peak XV' when it was first surveyed in the late 1840s; after it was determined that it was the tallest known to date (1856), it was given the name 'Mont Everest,' after George Everest, the former head of the Survey of India who as noted above introduced many reforms that made it a first-class organization. It is interesting to note that in their 1907–08 monogram, Burrand and Hayden of the Survey of India specifically address the naming of 'Mt. Everest' (see p.21). In 1904, extensive inquiries had been made by the Tibet Frontier Mission into any local name; they could not find any name assigned to it by any of the groups of people living near the mountain.

Had its historical Tibetan name actually been 'Chomolungma' ('Goddess Mother of the World'), or 'Sagarmatha' ('Sky Head' in Sanskrit), which are advertised in our era, they would have found it ('Devadhunga,' meaning 'Holy Hill' or 'Abode of Diety,' was also used around the turn of the 20th century but was dismissed a decade or so later). However, there are a number of people who believe that a Tibetan name existed for the mountain as far back as 1000 AD, and that in order to preserve the use of a British name, the officials suppressed any and all findings of such a name (sounds like a conspiracy theory, perhaps?). An interesting article by W. Aitken on the subject which can be found in *The Himalayan Journal*, Vol.59, 2003, entitled "An Enquiry Into the Real Name of Mt. Everest," sheds some light on this issue. Also see *The Himalayan Journal*, Vol.53, 1997, for an article by Michael Ward regarding the names of Mt. Everest. See a half-page note in *Nature* (May 1931), and finally, a short but informative article by Noel Odell, "The Supposed Tibetan or Nepalese Name of Mt. Everest," in *The Alpine Journal*, Vol.47, No.250, May 1935, pp.132–3.

Another possibility is that due to the mountain's importance and fame, these local names were assigned to the peak after its height was revealed. If this is the case, then no local Tibetan (Sherpa) or Nepalese back in the 19th century would have referred to it by either of these names. Since the Rongbuk Monastery was built on the northern slopes of Everest, the mountain towering above certainly had a Tibetan name, but whether it was Chomolungma is debatable. We know that the monastery was not established until 1902 (Chan 1994), destroyed during the Cultral Revolution and then rebuilt in the 1980's. Hence, just because it is the location of a monastery, of which there are hundreds in Tibet located near significant mountains, it is difficult to argue that the Tibetans knew that it was one of the tallest before the peak was measured in the mid-19th century. Was it a sheer coincidence that the

mountain was named, ‘Goddess Mother of the World,’ which certainly points at its global pre-eminence, long before it was measured? I think not.

The case whether Mt. Everest had a pre-existing name given by the inhabitants of Solu Khumbu in Nepal is on shaky ground. Mt. Everest is for the most part unseen from the villages in the district. In addition, it is hard to determine if it is taller than the surrounding peaks, hence it is quite possible that the local peoples in the Khumbu did not even have a name for it. It was just another tall mountain in their backyard full of tall mountains.

Chapter 3

Modern History, the Essentials

[A reference to 'India' in this historical context includes all of modern India, Bangladesh, and Pakistan. A summary of the modern history of Bhutan can be found in a later chapter.]

The when and where of exploration within the Karakoram-Himalaya was very much dictated by the politics of the 19th and 20th centuries; therefore, a brief summary of the modern history is in order. As noted in the previous chapter, exploration did not occur simultaneously across the region. Much of the early exploration and mountaineering occurred in the Western Himalaya and a little later in the Karakoram, which was either a part of India or 'administered' by it (Greater Kashmir). Sikkim was next, primarily in the first couple of decades of the 20th century. Most of Nepal was not really put on the map until after 1949, with the exception of the Kangchenjunga region. The Eastern Himalaya is interesting because there was an initial spurt of exploration in the early 20th century, but then the area lay fallow until the late 1970s, when mountaineers in particular were able to access some of the amazing peaks.

Let us set the clock back in order to put our story in its proper context. South Asia, which until recently was often referred to as the 'Indian subcontinent,' has had a succession of invaders over its long history. Various waves of Arabs invaded western India around the mouth of the Indus River and eastwards in the 7th century and were well entrenched by the early 8th century; they of course introduced Islam to the region.

The first Europeans to arrive were the Portuguese, with their advanced sailing technology; they made landfall on the west coast of India at Calicut in 1494, shortly thereafter founding their primary base of operations northward at Goa. The Portuguese were quickly followed by additional Europeans bent on getting in on the spice trade or—if that endeavor failed—exporting cotton, silk, and indigo to Europe. Specifically, the French, Dutch, and the British followed in the wake of the Portuguese. The British force that landed were not direct agents of the crown; they had a charter from the crown but they were an independent company—the English East India Company (EIC). The EIC was established when a small number of London businessmen pooled their resources and purchased a few ships in order to get their slice of the Indian Ocean spice trade.

While the various European powers were establishing small trading posts on the west and then east coasts of India, to the north the Mughals (Moguls) arrived from Central Asia after laying claim to

Afghanistan. By 1530, they had built their capital at Delhi and were masters of most of the northern lands. The Mughal style of rule was to co-op the already existing political structure; essentially, they managed many hundreds of small principalities that had pre-existed across the region. At this juncture in time, there was no concept of Indian national identity; society was fragmented—the fact that hundreds of dialects were spoken one of the main causes of the division. The population was mainly Hindu in its religious outlook. A smaller but important percentage were Muslims, including the Mughals; and a few Christian communities existed along the southern reaches of the west and east coasts. The Sikhs were just starting to develop their own identity in the Punjab when the Mughals came to seize power. (Sikhism is a fusion of Islamic and Hindu theologies.)

The story from the mid-17th century onwards is one of the slow decline of the Mughal Empire and the ascendency of the British as a force to be reckoned with. In time, The Company was able to push the other three European powers out of India. At first, the EIC was solely involved in commerce, but over the decades, as the fractured nature of Indian politics became evident, The Company found itself becoming more and more drawn into regional politics. Their core area of operations was in the northern zone of the Bay of Bengal, which included the Brahmaputra River Delta. The Company founded a small town up one of the channels of the Brahmaputra River, Calcutta, which of course has grown into a massive chaotic city.

A pivotal year for the EIC was 1757, when it was able to win the Battle of Plassey against the French. The French and English had vied for various markets on the east coast of India for over a hundred years. A large part of each antagonist's strategy was to cozy up to one or two of the regional rulers with the intent of forging an alliance against their foe. This is what the French did in Bengal; but when they lost the Battle of Plassey, their territory was given to the EIC by the Mughal Emperor. During the early period of European intrusion, the Mughal Empire was still in existence, but its power was waning with each passing decade. In fact, by the mid-18th century, the Mughal powerbase had weakened significantly, with the result that most of the power resided in the hands of the regional principalities. True to form, all of these principalities fought amongst themselves; with the net result that no one could oppose the growing power of the EIC. After the Battle of Plassey, the EIC was able to methodically incorporate ever-larger tracts of land and their inhabitants into its sphere of influence.

In 1784, the British Parliament began to curtail the power of the EIC; it had become a colonial ruler in its own right. The new arrangement stipulated that Parliament would advise The EIC on political matters but the EIC had *carte blanche* on its business affairs. This duality worked until 1858, when a

small but far-reaching rebellion emerged among the sepoys; that is Indians of various ethnicity employed as troops within the Indian Army. This event is referred to as either the First Indian Independence Movement or as the Indian Mutiny, depending on your perspective. The rebellion was suppressed with force but Parliament decided that it needed to be the sole power in the region, so it took over all aspects of the EIC. The EIC was disbanded in 1874 and its shareholders were compensated by the British Government.

Henceforth all of the former holdings of the EIC were now a part of the British Empire. The British administration within India is often referred to as the 'Raj.' Throughout the second half of the 19th century, the Raj incorporated more lands to the north of the Gangetic Plain by various means, which we will discuss below. Prior to this time, the various principalities within the Karakoram and Himalaya (minus Nepal and Bhutan) had minimal contact with the Mughal Empire to the south.

By the early 20th century, an Indian independency movement had begun, led of course by Mahatma Gandhi and a few other key men. Part of this was that the diverse Indian cultures were starting to share some points of commonality and form a weak bond. However, the bond quickly disintegrated once the British had departed India. The main point of contention within Indian society was the gulf between Hindus and Muslims; this was a very large gulf that to this day has not been breached.

Here is how it happened. After the conclusion of World War II, the British Government had little desire to continue to rule over India, so, on fairly short notice, they turned rule over to the Indians (August 15, 1947). There was a major problem, however—the Indians were divided along religious lines; Hindus versus Muslims, Muslims versus Sikhs. The solution was that British India was divided into two countries—India and Pakistan (this is known as 'the Partition'). In theory, the former was to be the home of Hindus and the latter was for Muslims. However, the Muslim minority was intermixed within the population at large; the largest concentrations of Muslims were in the west, which became West Pakistan, and another large population was in the Bengal region, which then became East Pakistan. Many Hindus in the now-designated Muslim regions packed up and moved, while Muslims migrated out of Hindu areas into either West or East Pakistan. The resulting migration in multiple directions mixed with centuries of hostilities between the two communities led to widespread sectarian violence and hundreds of thousands of Hindus and Muslims killed. In time, however, a divided Pakistan (more than just geographically divided) did not work; West Pakistan was the dominant partner, to the resentment

of East Pakistan. With the support of Russia and India, East Pakistan formed its own country in 1971 and changed its name to Bangladesh ('Land of Bengal').

Greater Kashmir and North India

It is now time to fill in the historical gaps regarding the Himalaya and Karakoram regions in particular. Although Nepal and Bhutan have been able to retain their separate identity from India, Pakistan, and China, there have been a considerable number of points of contention for the last several hundred years. The lands to the west of Nepal (today the Indian states of Uttarakhand, Himachal Pradesh, and Ladakh) were governed by a host of small chieftains until the Gurkhas emerged from Nepal and overran the region in the late 18th century. The Gurkhas also pushed south into the Gangetic Plain, which put them in contact with the East India Company—which of course started a war (Nepalese War 1814–16. The Gurkhas were summarily defeated in large part due to the superior firepower of the Army maintained by the EIC. The invaders were pushed back to their old boundaries, which correspond to the modern boundaries of Nepal, and hence British India took possession of the Kumaon and Garhwal regions (Uttarakhand) up to the border with Kashmir.

The short version of the history of Kashmir is that the region was conquered by the Sikhs in 1819. Prior to this time, the region was under the control of numerous princes who ruled over small chunks of land which were essentially fiefdoms. The first Sikh ruler ('Raja') was Gulab Singh, who was able to annex Baltistan and Ladakh soon after he came to power. The larger Sikh Empire was ruled at the time by Gulab's uncle, the Maharaja Ranjit Singh, who ruled from Lahore in the Punjab. After the death of Ranjit Singh, the Sikh Empire began to fall apart; by 1845 it was at war with the Indian Army. India won and by 1846 they had taken control of the eastern half of the Punjab (east of the Sutlej River). Two years later, the Sikhs and India were back at war, with India besting the Sikhs once again. The result was the complete annexation of the Punjab. However, the Government of India left the Raja of Kashmir intact, as Gulab Singh and his offspring had sided with the British during the two wars.

In time, Kashmir became essentially a British protectorate; it was almost completely surrounded by British India. In the second half of the 19th century, British or Indian explorers had unlimited access to northern Kashmir; that is Ladakh and Baltistan. Hunza remained independent until 1891, when it had affronted the British one too many times, and hence it was quickly annexed. This was the state of Kashmiri affairs until the Partition of India in 1947.

From here on, the history of Kashmir is very complex; it is a fact, however, that Kashmir witnessed a lot of bloodshed in the late 1940s over who was going to rule and to whom the region belonged. Kashmir was divided in 1947 between Pakistan and India. The Valley of Kashmir, most of the Pir Panjal, and Ladakh were given to India, while Baltistan and Hunza were included in Pakistan. Thus, most of the Karakoram Range lies within Pakistan, as does the extreme western part of the Himalaya, that is the region around Nanga Parbat. The 'border' between the two countries is called the Line of Control (LOC). You can today find maps published in Pakistan that show Hunza and Baltistan as an integral part of Pakistan, with the southern part of Kashmir labeled as 'disputed territory'; conversely, Indian maps show all of Kashmir as well as Baltistan and Hunza as a part of India. Since the late 1940s, there have been several large conflicts over the region and many smaller ones. The contention over ownership and resulting warfare are far from over. In the summer of 2019, the Indians reorganized their slice of Kashmir: essentially, two union territories were created—Jammu and Kashmir the first, and the second consisting of Ladakh. The latter is made up of two districts: Leh and Kargil. What this reorganization means, if anything, is yet to be determined. (See Chapter 34 for an overview of the Siachen Glacier conflict.)

A brief history of Sikkim and environs is also in order, since it is a completely separate matter from Kashmir. From the 17th century onwards, Sikkim was invaded multiple times by its neighbors, the Bhutanese, Tibetans, and Nepalese. In 1817, the East India Company checked the advance of the Nepalese into Sikkim, which was at that time home of the Lepcha State, but ruled by a minority of Tibetans who had immigrated southward (the Lepcha were essentially the 'original' inhabitants of Sikkim). From this time forward, British India held a loose power, or as Longstaff put it, a "vague suzerainty over Sikkim." In 1835, one of the local Raja's (Chogyal) ceded the district of Darjeeling to India. During the middle of the 19th century, a number of kidnappings and illegal arrests of British subjects within Sikkim (Drs. Archibald Campbell and Joseph Hooker in 1849), led to further British involvement and territorial gains north of Bengal. For example, in 1860 the British went into Sikkim with considerable military force under Eden, and forced the Raja to accept the concept of free trade. The Sikkim Raja would also, as dictated by the British, be held responsible for the safety of merchants and travelers who were in his territory.

In addition to its internal concerns, in the late 19th and 20th centuries Sikkim was at the middle of a power struggle between the Tibetans and the British. For example, in 1884 the British Government of India wanted to establish trade relations with Tibet. Permission was granted by the Chinese, who held

on-again, off-again sway in Tibet. The Tibetan officials who ruled in Lhasa, however, were not in the least interested in commerce with India, no matter the ethnic identity of the merchants involved. In 1885, the Government of India established a trade mission that was supposed to journey to Lhasa and open dialogue with their Tibetan counterparts. The mission never left Darjeeling because the Tibetans refused it entry to their territory. Sikkim, by virtue of lying between Bengal and the main route to Lhasa from the south (Chumbi Valley), seemed to be at or near ground zero when their two powerful neighbors were at each other's throats.

Tensions increased over the next several years. The Tibetans fortified the border near the historical route into Sikkim, the Jelep La. In 1888, a Tibetan force crossed over the border and started a short war with the Indian Army. The Gurkhas, who were now recruited into the Indian Army because they were the best soldiers in South Asia, made short work of the invaders, sending them fleeing back across the border. By this time, Sikkim was a protectorate of British India; it was allowed to maintain its own ruler on the throne, but a Political Officer from the Government of India resided in country as an advisor. After the Partition of India in 1947, Sikkim was granted protectorate status within India; they could do as they pleased internally, but its external affairs were controlled by Delhi. In 1975, however, Sikkim voluntarily became the 22nd state of India.

East of Bhutan is the Indian state of Arunachal Pradesh, which through the period of the Raj was a part of the Indian state of Assam. In 1972 it was separated from Assam and called the North East Frontier Agency. In 1987 it became a full fledge state and the named changed to Arunachal Pradesh. The border between Arunachal Pradesh and Tibet runs through the crest of the Himalaya. The region was acquired by British India from Burma at the end of one of several wars between the two powers in 1826. The area was not developed or exploited by the British at all and still remains the least visited and most wild region of the Himalaya. The small area near the Eastern Bhutan border has had a strong Tibetan influence over the centuries; in fact, there has been considerable debate where the international border actually resides, despite the signing of the Simla Agreement and the establishment of the so-called McMahon Line in 1914.

The extreme eastern tip of the Himalaya lies within Tibet, where it straddles the Tsangpo River. Access by Westerners was not possible until the early decades of the 20th century, and then off-limits during the turbulent decades after World War II. From the late 1970s, the region once again opened up to limited foreign explorers and mountaineers. Unlike most of Tibet, which is extremely arid, this sliver

of the landscape is quite verdant, in part due to its lower base elevation and its proximity to the monsoon rains, which originate in the relatively close Bay of Bengal.

Nepal

The Kingdom of Nepal has been ruled by a variety of royal families for at least a thousand years. In the 1760s, the Gurkhas (Gorkhas), who had a small kingdom of their own within Nepal, were able to seize the throne in Katmandu and establish rule over the entire country. The Gurkhas power was based on military strength, so they found it difficult to curtail their territorial ambitions at their own borders. For example, they invaded Sikkim in the 1770s, which in turn put them in direct contact with the East India Company. In 1791, the Gurkhas marched into southern Tibet and demanded land and other concessions. The Chinese Emperor came to the aid of the Tibetans and chased the Gurkhas back into Nepal; in fact, the Chinese Army was within a few miles of Katmandu before turning back. The next major setback for the rulers in Katmandu was their invasion of Sikh- and British-held lands in northwestern India. The Gurkhas, as already mentioned above, were defeated and withdrew back into the old boundaries of Nepal.

The 19th and a good part of the 20th centuries at the Gurkha court was a period of dynastic turmoil; it was a series of plots by the faction of the Royal Family who were not in power to overthrown those who were ruling. The political structure began to modernize in 1948, which also happens to correspond with the opening of its borders to foreign visitors. Even into the 21st century, there had been a lot of political turmoil in Katmandu. From 1996 through to 2006, the country was caught in a seemly endless civil war between the established government and a strong communist party (Maoist). In 2006, a peace accord was signed between the two sides, with the communist sharing in government administration. The monarchy was decommissioned as part of the deal. A new constitution was adopted in 2015, with a National Assembly and a prime minister, although political stability still appears to be fragile. Anyone who has been to Nepal since 2006 will have noted that there is a major effort by the government to build ‘roads’ into the most remote of villages and to provide electricity as well. Currently, the powers in Katmandu have been wooed by the Chinese Government, so we can expect an increase in the Chinese presence as well.

The inhabitants of Nepal compose something on the order of 125 ethnic groups, with about as many languages; hence Nepal, despite its diminutive size and population compared to its neighbors to

the south and north, is extremely multicultural. It should be noted that the Gurkhas are not an identifiable ethnic group; rather, the term refers to an important political family. The name itself originates from the town of Gorkha, located about 30 miles west of Katmandu. Today, however, the term ‘Gurkha’ has become synonymous with ‘Nepali.’

Chapter 4

The First European Explorers

We know from the archives of the Jesuits that the first Europeans to traverse the Himalaya, at least those with documented proof, were the Jesuit missionaries, Antonio d'Andrade and Manuel Marques, who in 1624 ventured up through Garhwal, India, and over Mana Pass (18,478 ft) into Tibet. The brothers repeated this feat again in 1625 in order to establish a small mission in the village of Tsaparang in Tibet. In fact, Jesuit documents indicate that at least eleven Jesuits, mainly Portuguese from their bases in Agra and Goa, crossed or attempted to cross Mana Pass into Tibet between 1624 and 1640 (see *The Himalayan Journal*, Vol.4, under "Notes," chapters 2 and 3 in Wessel, 1924). Other Jesuits of this era worked in Buddhist-dominated Ladakh, known in those days as 'Little Tibet.' There were also several Jesuits who traveled through Bhutan in the mid-17th century on their way to Lhasa. These missionaries ventured into those unknown lands in search of small enclaves of Christians that were rumored to exist. Many contemporary readers may think that Marco Polo—along with his father and uncle—might have been the first Europeans to traverse the Himalaya or Karakoram, but their route, outbound (~1271) and on the return, traversed Central Asia and hence took them across the Pamirs, well to the north of the Karakoram.

The British historian John Keay, who has conducted extensive research into the adventures and exploits of 19th-century explorers and travelers in the Karakoram and Western Himalaya, noted that the first Europeans into the mountains were not that interested in the mountains themselves. They were, however, interested in Central Asia and Chinese Turkestan. In other words, they were essentially what I refer to in an earlier chapter as 'travelers' through the mountains, not explorers of the mountains. As briefly noted in the first chapter, everything changed in the mid-19th century, when the Great Game intensified. The threat or perceived threat of Russian influence in Tibet and the Pamirs, by the leadership of the Raj, motivated the Government of India to expand the Great Trigonometrical Survey to include the Himalaya-Karakoram. Knowledge of strategic routes for troop movement and resources was suddenly paramount. There had been some early surveying but it was hit-and-miss rather than systematic; usually it had been conducted secondary to other objectives.

Various employees of the East India Company (EIC) made short excursions into the mountains from Bengal, but the first major British player on the scene was William Moorcroft, a trained veterinarian who landed in India in 1808 in the capacity of superintendent of the EIC's stud farm. Over

the decades that he lived in India, he made several extensive journeys in the Himalaya. In 1812, he traveled into the Kumaon-Garhwal region and pushed northward over the Niti Pass (~16,633 ft) into southwestern Tibet. His mission, at least what he told his superiors, was to replenish stock for the stud farm, although when he began this excursion, he did not actually have permission from the EIC. He did not let a small thing like permission from his employers stop him from exploring the region around the freshwater lakes of Mansarovar and Rakas. To his credit, he was able to sort out the complexities of this region, which contain the headwaters of the Tsangpo, Indus, and Sutlej rivers, a topic that had been of some interest in India and Britain. On his return to India, he brought back goats instead of horses; he noted that Tibetan goats had exceptional wool. Within a few years, goat herding and the production of wool took hold in the foothills of the central Indian Himalaya.

After getting grilled by his superiors at the EIC for this unauthorized 1812 trip, we find Moorcroft in the fall of 1819 heading to Ladakh, with hopes of eventually making his way to Turkestan. This foray did have the blessings of the EIC. The expedition slowly wound its way through the various 'hill states' that dotted the foothills and southern slopes of the central Himalaya. Some of these small kingdoms or fiefdoms were under the control of the Sikhs (Kashmir), while others maintained their independence.

Shortly after leaving the territory of British India, Moorcroft was arrested and forced to make his way to Lahore, the seat of the Sikh Government. After months of negotiations with Ranjit Singh, the Sikh ruler, Moorcroft was allowed to rejoin the expedition, which had been waiting for him in Leh. He spent the next three years in Ladakh, hoping to establish contact with merchants and politicians who would travel there from Turkestan; another British subject, named Trebeck, shared in most of his travels during this period. While waiting in Ladakh for the proper openings in the lands to the north, Moorcroft and Co. were able to explore some of the region, but never traveled north of the Nubra River; in other words, he only saw the magnificent peaks of the region from afar. Finally realizing that he was waiting in vain for an opportunity that would never materialize, Moorcroft and his party headed west to Kashmir and then finally they were off to Afghanistan in search of a new stock of horses.

Another Brit to make his mark on the region was Godfrey Vigne, who in his younger days had trained as a lawyer. He traveled extensively throughout South Asia in the mid-1830s, but then shifted his focus westwards, spending considerable time in Kashmir—with several excursions into Baltistan and Ladakh to his credit. In 1835, he attempted to find a pass that was rumored to link Baltistan with Chinese Turkestan; its position was supposed to be between the Muztagh Pass in the west and the Karakoram Pass to the east. He learned of the existence of this pass from locals in his employment

(more on this in a later chapter). He wrote about his travels, which were published as a two-volume set entitled: *Travels in Kashmir, Ladakh, Iskardo* (1844). In this book, he spent a lot of time describing the various people he had met and their cultural traits; he also dove into regional history, or at least legends which the locals considered as part of their history. With regards to the terrain, he did manage to sketch a map, and upon his return to India spread the word that the topography of the Karakoram was exceedingly complicated. Today, there is a glacier and a peak named after him in the Central Karakoram. The glacier is a tributary of the upper Baltoro Glacier, while the peak is just north of Chogolisa.

Although I won't go into any detail, it is worth mentioning the names of several additional early travelers. Victor Jacquemont was a French national who traveled throughout Kashmir during the 1830s. He was a high-flying character, certainly out of place in the humble setting of Srinagar. Another character was Alexander Gardinier, a shadowy character who supposedly traveled more than anyone else throughout the region, including Central Asia. However, there is little evidence to back up claims of his exploits, of which he evidently boasted of many. Some early writers support his claims, while others write him off as a fraud. Neither of these two men made any lasting impact on the region.

By 1846, the Government of India was starting to show some interest in the lands to the north; this, as noted above, was due to the southernly expansions of the Russian sphere of influence into Central Asia and the Pamirs. These were the opening stages of the Great Game. They commissioned Alexander Cunningham to survey the boundary between the British hill states (Kuku, Spiti, Lahul) and Ladakh; the former was still under the control of the Sikhs. The next year, Dr. Thomson and Lt. Strachey joined Cunningham in a survey of the border between Tibet and Ladakh.

For the most part, these three 'surveyors' traveled independently of each other, forming their own teams. Cunningham spent most of his time in Ladakh, eventually writing a book about it. Dr. Thomson, who was a surgeon and amateur naturalist, ventured up to the Saser (17,753 ft) and Karakoram passes (18,176 ft) in August 1848, but then turned south and wintered over in Skardu. He was greatly disappointed to find that there was no grand view from the Karakoram Pass. In 1848, Strachey reached the lower part of the 'Siachar' (Siachen) Glacier, source of the treacherous Nubra River. He is probably the first Westerner to see this great body of ice. The border survey, which was supposed to be the paramount mission for these three men, had been neglected—essentially pushed aside by the participants for more interesting travels. There seems to be a theme here with men sent out on behalf of the Government of India—they had considerable leeway. By modern standards, it was a haphazard affair, although it did yield considerable results regarding the geography of the region.

To the east, Sir Joseph Hooker—a botanist who collected for the Kew Gardens, Britain's premier botanical gardens—spent much of late 1848–49 wandering through Sikkim and eastern Nepal. Although his primary interest was collecting plant specimens, he like many of this era dabbled in other branches of science, such as geology and cultural geography. He tended to travel as the sole European in his expeditions, living a fairly spartan existence when he was on the trail. The exception to 'solo' travel being when Dr. Campbell, a resident of Sikkim, accompanied Dr. Hooker during his extended time in Sikkim.

Hooker was given permission by the Government of Nepal to travel up the Arun River Valley to the border with Tibet. He had designs on crossing over into Tibet and then making his way back to Sikkim; however, he ended up staying in Nepal. After reaching the upper Arun, he turned south and then made his way east towards Kangchenjunga following a network of trails. He crossed back into Sikkim in December 1848 after spending two and a half months in Nepal. His crossing point was the Islumb Pass (height unknown) on the southern section of the Singalelah (Singalila) Ridge. Dr. Hooker then spent the remainder of December and the first half of January trekking through central Sikkim, not only collecting flora but also noting the various groups of people and their cultures. By late April, he was ready for his next foray, the objective of which was to trek to northwestern Sikkim and then cross over into Tibet.

Over the next several weeks, he was able to slowly work his way up the Teesta (Tista) River Valley towards Tibet, botanizing and geologizing as he went. In early July, he reached the Sikkim-Tibet border at Kongra La (16,848 ft). He then spent the next several weeks on the dry plateau north of Kangchengyao (22,601 ft), which he referred to as 'the Tungu.' He began his southward trek back via the Lachen River and then moved eastwards into the next valley, the Lachung. He proceeded up the valley to the Donkia Pass (today called the 'Dongka La,' 18,152 ft). Although this pass is a few miles south of the border with Tibet, it offers a good view of the southern Tibetan Plateau. He found a handful of plants growing at this altitude: mainly lichens but one or two flowering types which managed to eke out a living in the rarified air.

The good doctor noted that the hills on the plateau to the north were gentle, rising from 2,000–3,000 ft above the nearby river valley, and had a yellow-red color. He wandered around a number of the shallow lakes that dotted the landscape, noting the forty to fifty species of plants that inhabited the lake shores, as well as antelope, wild ass, and deer. (This sliver of Sikkim is actually a part of the Tibetan Plateau. The international border does not follow the highest peaks or ridgeline in this area.)

Several weeks later, while traveling in central Sikkim with Dr. Campbell, Dr. Hooker noted an amazing twenty-four species of rhododendron growing in the temperate forest. It was not long after that the Hooker-Campbell duo were taken hostage by order of the local Rajah of Sikkim. They were held captive for several weeks; but when the British authorities got wind of the event, a small troop of soldiers were sent on a rescue mission. In the end, Drs. Hooker and Campbell were released by the Rajah, but only after a show of force by the troops. As punishment, the Governor-General of Bengal seized a considerable amount of the Rajah's territory, putting it under British protection. This concluded Dr. Hooker's two seasons in the Eastern Himalaya. Unfortunately, a large part of his plant collection had been destroyed or damaged during his captivity. Hooker was a naturalist and added considerable knowledge to what was known at that time about the regions he had traveled through, but he was not a surveyor, and therefore his work emphasized the flora and fauna with considerably less discussion regarding the topography of the area he had traversed.

Another notable traveler in the Karakoram-Himalaya at this time was William Johnson, a surveyor who from the late 1850s through the mid-1860s ventured far and wide across Kashmir with his theodolite. He established many high triangulation stations but in the end the quality of his surveys was often poor and had to be reworked by his successors.

Table 1 lists most of the expeditions to the Himalaya and Karakoram prior to World War I and in its aftermath. This is by no means a comprehensive list, but it does attempt to cover the larger expeditions, which made significant contributions to surveying, science, and/or mountaineering. Note that the vast majority were private affairs and most took place in the Karakoram. The reasons that most occurred in the Karakoram or the Western Himalaya was that Nepal and Bhutan had isolated themselves from the rest of the world; they were not letting foreign nationals across their borders. A second reason was that there was a lot of high-elevation glaciated terrain in the Karakoram that would keep any explorer occupied for an extended period of time.

There are a couple of themes evident in this table; of the seventeen expedition leaders, nine were English, four Italian, and then a mix of nationalities for the remainder. And as noted above, the overwhelming number of expeditions were funded privately, although frequently surveys were sent along from the Survey of India at the request of the expedition leaders. In addition, a number of explorers made multiple excursions into the Karakoram-Himalaya. It would not be exaggerating to say that from around 1900 through 1930 was the golden period of exploration of the Karakoram and western third of the Himalaya. This was when you could trek off the trail network that linked the villages

and find virgin ground to explore, and nearly every peak—regardless of its height—had never been trodden.

Table 1: **Significant Pre-World War I Expeditions into Karakoram-Himalaya**

Dr. Joseph Hooker. English (government). Science-botany.
1848-1849- Eastern Nepal, Sikkim

Adolph, Robert and Hermann Von Schlagintweit. German (government). Survey-Exploration-Scientific. 1855–57—Karakoram, Himalaya, Turkestan, southern Tibet.

Henry Haversham Godwin-Austen. English (government). Survey-Exploration.
1860—Hushe Valley.
1861—Masherbrum, lower Baltoro Glacier.

William Graham. English (private). Mountaineering.
1883—Garhwal, Sikki ('attempt' on Kabru)

William Conway. English (private). Survey-Exploration.
1892—Hispar-Biafo-Baltoro glaciers.

Francis Younghusband. English (government). Political-Exploration.
1887—Traversed Karakoram via Muztagh Pass. Exploration.
1889—Karakoram Pass, Shimshal Pass, Hunza. Exploration and Political Mission.

Albert Mummery. English (private). Mountaineering.
1895—Nanga Parbat. Mummery dies attempting to cross NW ridge.

Oscar Eckenstein. English (private). Mountaineering.
1902—Baltoro Glacier, attempt on K2.

Fanny and Dr. William Workman. American (private). Survey-Exploration.
1898—Kashmir, Sikkim (aborted early on).
1899—Biafo Glacier.
1902—Chogo Lungma Glacier.
1903—Hoh Lungma and Chogo Lungma glaciers.
1906—Nun Kun.
1908—Hispar-Biafo glaciers.
1911—Masherbrum environs.
1912—Siachen-Kondus glaciers

Dr. Thomas Longstaff. English (private). Exploration-Mountaineering.
1905—Garhwal, Tibet.
1907—Garhwal.
1909—Siachen Glacier.

Dr. Alexander Kellas. Scottish (private). Exploration.
1907, 1909, 1911, 1912, 1913, 1914, 1920, 1921. Sikkim and Kamet.

Carl Rubenson, Ingvald Aas. Norwegian (private). Mountaineering.
1907—Kabru, Nepal. Attempt failed just short of the summit.

Duke of Abruzzi. Italian (private). Survey-Exploration-Mountaineering.
1909—Baltoro Glacier. Reconnaissance/exploration around K2.

Filippo De Filippi. Italian (private). Scientific-Exploration.
1913–14. Rimo glaciers, Karakoram.

Post-World War I

Ph. C. and Jenny Visser. Dutch (private). Survey-Exploration.
1922—Saser Range, Karakoram.
1925—Hunza.
1929–30—Saser Range, Turkestan.
1935—Northern Karakoram and upper Shaksgam River.

Kenneth Mason. English (government). Survey.
1926—northern Karakoram, upper Shaksgam River.

Duke of Spoleto. Italian (private). Survey-Exploration.
1929—Baltoro Glacier, attempted on K2.

Giotto Dainelli. Italian (private). Survey-Exploration.
1930—Siachen-Rimo glaciers.

The Three Brothers

In the mid-19th century, the East India Company was looking for a small group of scientists to conduct a magnetic survey in the Himalaya. Years earlier, a similar survey had already been conducted across India south of the Himalayan foothills, but the company felt it was time to include the mountains north. As we have already discussed, some of these regions were under direct British rule, while others were ruled by various regional potentates.

Deviations in the magnetic field on the surface of Earth occur due to large deposits of subterranean metals bound up in the rock strata. These deviations can of course produce false compass readings. The EIC found three geologists who were also accomplished mountaineers; these were the Bavarian brothers Adolph, Hermann, and Robert Schlagintweit. From 1855–57, they explored and measured magnetic deviations over a wide swath of the Himalaya and Karakoram landscape. In addition

to their magnetic survey, they geologized, botanized, did a little work in astronomy, and threw in some cultural studies for good measure. They had planned on writing a nine-volume compendium when they returned to Europe; in the end, they managed to summarize their results in four volumes.

To say that the Schlagintweit brothers were keen travelers would be a massive understatement—they were almost always on the move. Although their main objective was the Himalaya-Karakoram, they also spent some time in Tibet and Chinese Turkestan as well. It has been estimated that they covered some 18,000 miles between the three of them over that period, mainly on foot. Sometimes they traveled as a threesome or twosome, but more often than not they broke up into three groups in order to cover more ground and conduct that much more research. They had a host of assistants and support staff on the payroll, otherwise it would have been impossible for them to accomplish as much as they did.

In early June of 1855, Hermann led a small expedition around western Sikkim. He had some difficulties with the local government which was in power at that time (pre-British administration), so he thought he would try and work his way along the remote Singalila Ridge. He hoped that his party would remain out of sight of anyone that might report his movements to the officials in either Gangtok or Katmandu. (Singalila Ridge extends from Kangchenjunga southward and separates Nepal from Sikkim; today, it is a popular trekking route for those who want close-up views of the peaks of the southern Kangchenjunga Massif.) The expedition was able to ascend the ridge and move northward for a number of days but eventually was halted by Nepalese authorities; there was nothing for him to do but return to British India. It is interesting to speculate what Nepalese officials were doing in this remote area. They probably had been tipped off because in general their borders were loosely guarded.

Meanwhile, Adolph and Robert were in the Kumaon region of the central Himalaya, south and east of Nanda Devi, not far from the western border of Nepal. The two brothers trekked up the Gori Ganga Basin towards the village of Milam. En route, Adolph split off for a few days and made a traverse of Traill's Pass (17,428 ft) despite the deep snow. (Traill's Pass is named after George Traill, who was a British Commissioner in Kumaon and made his way over this difficult route in 1830.) Robert took most of the gear and the bulk of the personnel on a route that was longer but afforded easier travel. They were reunited in early June in Milam.

From Milam, they trekked north, working their way into southern Tibet. The Tibetans and their Chinese overlords were of course prohibiting foreigners, especially Europeans, from entering Tibet.

Adolph and Robert donned disguises once they crossed the border; however, they were only able to conceal their true identities for a short period of time. Money does 'speak an international language,' and did so even in 19th-century Tibet; the two brothers were able to bribe border guards and hence allowed to go as far as Gartok, some 100 miles farther north. The details of their exact movements are unclear but we do know they reentered Kashmir near Mana Pass (18,478 ft) in the Garhwal, and proceeded to the north side of Kamet (25,447 ft), where they attempted to climb Abi Gamin East (24,170 ft), a satellite peak of Kamet. The summer monsoon was in full force; nevertheless, they were even able to reach 22,239 ft (according to their estimate)—which given the climbing equipment of the day and unfavorable weather, was a remarkable feat.

After the attempt on Abi Gamin East, they made their way south to Badrinath; from here, the two brothers went separate ways. For all of September and the first half of October, Robert remained in Garhwal while Adolph returned to Tibet despite the travel ban. While they were traveling, they were collecting magnetic data, and studying the geology and glaciology of the area.

During the winter of 1855–56, they ventured in central and southern India, as little could be done in the Karakoram-Himalaya during that period. In late April of 1856, all three brothers were in Simla comparing notes on their individual travels up to that time. After their short conference, Hermann headed to Ladakh, where he visited a number of the local salt lakes before going to Leh in mid-July. Robert ventured through Zanskar and Ladakh, making his own way to Ley in late July. From Leh, Hermann and Robert made their way via Saser and Karakoram passes into Tibet. They proceeded through the Kun Lun Mountains via Elchi Pass (est. 17,400 ft) and on to Khotan. On the return journey, they took a different route through the Kun Lun Mountains, eventually reentering Ladakh via the Karakoram Pass. It had been a grueling expedition; they had suffered from the altitude and cold, but had managed not to get expelled from Tibet.

Adolph in turn trekked to Baltistan, where he worked his way up the Hushe Valley, spending several weeks exploring the nearby glaciers. Ultimately, he made his way over to the lower Baltoro Glacier for additional geology and glaciological work. It is possible that he was the first Westerner to lay ones of this massive piece of ice. In September, he ventured to Nanga Parbat and spent several days exploring the Diamir glaciers on the mountain's east side before returning to Srinagar. By mid-October, all three brothers were in Srinagar recovering from their journeys and taking stock of their large collections of rocks, plants, animals, etc.

By early November, they were back on the trail headed for Rawalpindi. It was here that they made plans for the final segment of the multiyear expedition. Hermann returned to Germany via Nepal (Katmandu Valley) and then Ceylon. Robert rode a horse and then a camel across the Punjab and Sindh (Pakistan) enroute to Karachi, eventually reaching Bombay in early April of 1857. He then made his way to Ceylon before boarding a steamer for Europe. As it turned out, Hermann was about ten days ahead of Robert on the trip back to Europe.

Adolph, on the other hand, traveled around the Northeast Frontier (Pakistan) during the winter of 1856–57; by May, he was in Ladakh with intentions of visiting Chinese Turkestan, and then making his way across Central Asia and on to Europe. He avoided Leh and the Karakoram Pass in order not to draw attention to his expedition, since he did not have permission to enter either Tibet or Turkestan. In early July, he crossed from Kashmir into Tibet via a little-known route that he described as a three-day trek east of the Karakoram Pass (possibly the Chang-Chenmo or Lanka Pass). Weeks later, he made his way to the outskirts of Yarkand, where he fortuitously had no trouble with the local authorities or the populace. He then moved on towards Kashgar, where his luck finally ran out; he was arrested by the guards of the local potentate for being an intruder. The expedition staff were thrown in prison for thirty-five days, while Adolphe paid the ultimate price for this lack of permission—he was beheaded. Several of his staff died in prison, but a number were released and able to make their way back to India with some of Adolphe's notebooks and the story of his final months.

What are we to make of the Schlagintweit expedition? They were meticulous in their work, as even a cursory look through the pages of their four volumes clearly shows. But one wonders if they did not try to accomplish too much in the allotted time. Since the trekking season was typically from late May through September in the Karakoram and Turkestan, they crammed a lot of work and miles into the short seasons. Today, the brothers are pretty much forgotten, as they were over the course of the 20th century. If given to speculating on the reason why their travels have remained in obscurity for so long, it could be due to the fact that when it came to writing up their results, they stuck with the scientific results—it was never intended to be a travelogue or series of adventure stories. (For a summary of their work in the Karakoram-Himalaya, read "Three Pioneers: The Schlagint-Weit Brothers," *The Himalayan Journal*, *Vol.36*, 1980 by H. Alcock.")

H.H. Godwin-Austen

The first professional surveyor to venture into the Western Himalaya and Karakoram was an Englishman with the aristocratic-sounding name of Henry Haversham Godwin-Austen. Haversham's father was a geologist but many others in the family had spent time in the military; Henry found his own career in that line of work as well. As a young man, he trained at the Royal Military College as a surveyor. In 1852, after he had graduated, he found himself in the Irrawaddy Delta of Burma at the conclusion of the Second Anglo-Burmese War. His grandfather was the leading general and the young Henry was selected as his aide-de-camp.

After the hostilities had ceased, Godwin-Austen was able to put his training as a surveyor to work in the Delta region. His next posting was in Peshawar, at that time a border town in western India (Pakistan today) adjacent to Afghanistan. What he did while at this post is not clear; in any case, he quickly moved onwards and upwards. By 1856, he had joined the Survey of India, specifically the Kashmir division, which was just commencing its operations in the mountainous north. His first season of field work commenced in 1857; he was given orders to survey within Kashmir proper, just northwest of the Vale of Kashmir. His second summer was spent in Jammu and Zanskar, where he was able to survey around the flanks of Nun Kun (23,409 ft), the tallest mountain in the Zanskar Range.

His first foray into the big mountains was no walk in the park; he was asked to survey the Karakoram's Hushe Valley, located due south of Masherbrum (25,659 ft, K1), which he did in the late summer of 1860. He used 'Skardoo' (Skardu) as his base of operations. He spent several weeks in the Hushe Valley but also trekked and surveyed up as many side valleys as time would permit. It is obvious from his writings that he was greatly impressed with the scenery, as thousands of mountaineers and trekkers have been since his time.

Godwin-Austen traveled in the company of several Indian surveyors and a team of support staff; but in these years, he typically did not work with any other Europeans. His expeditions were relatively small affairs; he and his crew definitely did not live like the Raja when in the field. It was in the upper Hushe Valley that he observed for the first time the release of a glacier-dammed lake, this one on the margin of the Masherbrum Glacier; other occurrences were to follow the next season. Although he had gotten off to a late start that summer, the weather cooperated and a significant amount of surveying was accomplished regardless of the late date.

One interesting aspect of his 1864 article and map in *The Geographical Journal*, entitled "On the Glaciers of the Mustakh Range," which summarizes Godwin-Austen's 1860 and 1861 field campaigns, is that on this map he has the Nubra River extending all the way to the Indus (he does not seem to have traveled that far upstream himself). Today, that whole stretch of river is part of the Shyok River, not the Nubra; the latter ceases to exist when it flows into the Shyok. I do not believe this is a typographical error; at some point in the latter half of the 19th century, the Survey of India must have concluded that the Shyok River is the larger of the two and hence its name should be continued downstream of the confluence with the Nubra. This reinforces the fact that at the time of Godwin-Austen's expeditions, there was still a lot of geographical work to be done in the region, and hence there was the need for detailed surveys.

In July of 1861, Godwin-Austen was back in Skardu, ready to resume the survey that he had started the previous summer. Elsewhere around the globe at this time, the U.S. Civil War was just starting, Italy had become united under King Emmanuel II, and in the eastern Bay of Bengal (Cherrapunji, India), world record rainfall was occurring.

After some preliminary surveying in the environs of Skardu, Godwin-Austen moved northward into the Shigar River Valley. A typical day of surveying consisted of an early morning start; Godwin-Austen and his assistants would ascend thousands of feet to a vantage point on some unnamed peak or ridge and set up their survey equipment. When the weather permitted, they would turn the theodolite onto the surrounding peaks. Those peaks which had been surveyed previously would become benchmarks or reference points for peaks that had not yet been surveyed. However, much of the day might be spent trying to keep warm and out of the wind, waiting for the clouds to clear so observations could be taken. For example, above the village of Shigar the team ascended a 16,919-ft peak and spent the night on that summit, patiently waiting for clear skies the following day. "Next morning, as the light in the east grew stronger, the view was one never to be forgotten," wrote Godwin-Austen. An hour after sunrise, clouds developed and the survey of distant peaks had concluded for the day; however, the team had to descend thousands of feet and then trek to its next destination.

The expedition then proceeded over the Skoro La (16,644 ft) in order to access the Braldu Valley. While camped on the south side of this pass, his party witnessed the release of two mudflows (*shwas*) down an adjacent ravine (most likely the sudden release of a small glacier-dammed lake). The first one Godwin-Austen estimated to have been some 90–100 ft wide and 15 ft deep. Boulders measuring from 6–10 ft in diameter were crashing down the mountainside in the slurry. Some of his

men just had time to move out of the path, as the mud smothered their campfires. A short time later, a second mudslide occurred, smaller than the first one, but it traveled at a much faster speed.

The Braldu Valley, which gives access to the Baltoro Glacier and which the important village of Askole is located in, is not connected with the Braldu Glacier located 20 miles to the north (Map 3). Historically, most explorers and mountaineers have referred to the valley as the Braldu, although on some modern maps it is labeled as the 'South Braldu Valley' in order to distinguish it from the Braldu Valley in which the Braldu Glacier can be found. In this manuscript, I will refer to it as the Braldu and not the South Braldu; which Braldu Valley I am referring to should be clear from the context.

When the expedition arrived in the village of Askole, Godwin-Austen was told by the village headman that he was only the second European to have ever been there; the first had been Adolphe Schlagintweit, who had passed through five years earlier. Although Adolphe had been in the area, he did not conduct the type of survey that Godwin-Austen was going to do. (It should be noted that Askole, which is the name of an actual village, is frequently used as a regional name and can include six additional smaller villages that occupy this east end of the Braldu valley.)

The expedition, now numbering sixty-six souls, proceeded up-valley towards the Baltoro Glacier. Survey stations were established along the slopes of the valley in order to gain a broader perspective. Before the party reached the terminus of the Baltoro Glacier, it turned north up the Punmah Valley and then spent the next five days trekking up the Punmah Glacier. One evening, while the men of the expedition were sitting in their camp, four men who were not members of the expedition suddenly emerged from the clouds. The foursome had trekked from Yarkand in Chinese Turkestan; they were making the journey in order to visit relatives in the Shigar Valley. Their chosen route had of course required a traverse of the Karakoram, which they had just accomplished a day or two before via the West Muztagh Pass (more on this pass later).

It was while they were on the Punmah Glacier that Godwin-Austen noted the presence of many supraglacial streams (streams that flow on the surface of the ice), of which a number flowed into "wells of great depth." These wells are what we today call '*moulins*,' vertical shafts which water has enlarged over time—in other words, water conduits which allow surface water to reach great depths within the glacier.

Proceeding northward, they ascended the Chiring Glacier in hopes of reaching the West Muztagh Pass, surveying as they went. The expedition got within a mile of the pass before clouds moved

in and snow began to fall. Godwin-Austen called a halt to their advance despite his great desire to set foot on the pass itself and look down the other side. He noted that this pass was about 12 miles west of the traditional (eastern or old) Muztagh Pass. He was told by a guide that "the old pass had become impracticable owing to the great increase of snow and ice." Haversham inquired when this had occurred, but the guide was unable to give an answer.

The next objective after they extracted themselves from the Panmah Basin was to continue up the Braldu Valley and on to the Baltoro Glacier. (On Godwin-Austen's map, the river and the glacier are given the name of 'Biaho.') He noted that in previous years the locals used to pan for gold at the terminus of the Baltoro Glacier, but when the position of the river where it exited the ice migrated from the left bank to the right, the gold content diminished and the locals gave it up. He also noted the name 'Gusherbrum,' where with a slight spelling change, we get 'Gasherbrum,' which means 'fine gold' in one of the local dialects. However, most people who know something of the Balti language today suggest that it means 'beautiful mountain,' while yet others say it can be translated as mean 'shining wall.'

Once they had climbed onto the Baltoro Glacier, Godwin-Austen's first impression was that the entire surface was covered with rock and dirt (often referred to as 'moraine' in older works but 'supraglacial moraine' today to distinguish it from depositional features such as lateral or medial moraines). In addition, the hummocky nature of the ice made travel that much more difficult when compared to other glaciers in the region. However, a few miles above the terminus, the medial moraines became more pronounced and the hummocky nature diminished, making for easier walking. They also started to encounter supraglacial lakes of various sizes; "of all shades of yellow and green, others as clear as crystal," Godwin-Austen noted.

The still-young surveyor was impressed with the scenery, especially Masherbrum, which he had surveyed from the southeast side the previous summer. In order to obtain a view of K2, the surveyors climbed a spur ridge of Masherbrum, above the camping spot known as 'Urdukas.' Several hours later, they were rewarded with an expansive view of the upper part of K2. Godwin-Austen not only conducted a survey but sketched the scene and later painted a watercolor based on his sketch. Interestingly, his account makes no mention why the expedition turned around a few miles short of Concordia; he must have seen it from his high vantage point. Whether it was due to time constraints, a diminishing food supply, or that he was satisfied with the distant view is a bit of a mystery. The location on the Baltoro Glacier that is called 'Concordia' is where a number of tributary glaciers converge into the Baltoro; one of the larger side glaciers leads northward to the base of K2 and has been subsequently named the

'Godwin-Austen Glacier.' Concordia is the *sanctum sanctorum* for any person who is a lover of mountains; many of the great peaks of the Central Karakoram are visible from here. Concordia was most likely named by Conway, who we will meet in Chapter Six, some years after the Godwin-Austen expedition.

On the trek back to Askole, the expedition made a side excursion up the lower part of the Biafo Glacier in an attempt to gain an overview of that prominent piece of ice (Map 4). After a few days of trekking up the glacier, Godwin-Austen obtained the sought-after view. From that vantage point, he estimated the overall length of the ice at around 40 miles (not a bad estimate)—more than double the 15–18 miles he initially thought it was. On a historical note, he was told by his guides that some 700 to 800 men from Nager had, thirty-four years previously, trekked over the Hispar Glacier and down the Biafo Glacier in order to raid the villages in the Braldu Valley. Some 100 persons and a vast number of livestock were captured and taken back to Nager.

At the terminus of the Biafo Glacier, which was at this time located on the northern edge of the Braldu Valley, he found plenty of evidence that in the past the glacier had stretched completely across the valley to the southern edge. When this occurred, frequently a large lake formed behind the ice. In the mid-17th century, a massive flood was generated when the water behind this glacier was suddenly released, producing very heavy flooding, with the loss of property and a significant number of lives in many downstream communities.

Godwin-Austen had hoped since the beginning of this expedition to be able to visit Hunza by crossing over the Nushik La (16,370 ft), the pass separating the Kero Lungma Glacier from the Hispar Glacier. However, intermittent stormy weather caused him to doubt if this was going to be possible. Nevertheless, the expedition made its way out of the Braldu Valley and proceeded to the upper reaches of the Basha River, where additional surveying was undertaken. From the village of Arando, they trekked northward up the Kero Lungma Valley and then on to the glacier with the same name. Fortunately, when they ascended Nushik La, it was a clear September day, and they could drink in the amazing 360° view. Noting how steep the descent was on the north side of the pass, Godwin-Austen and company retraced their route back to the Basha Valley. As the season was coming to a close, it was time for Godwin-Austen to start the trek back to Srinagar, which would take an additional two weeks.

During the summer of 1862, Godwin-Austen and team were in Ladakh, Zanskar ('land of white copper'), and a district known as 'Rupshu,' technically a part of Tibet. It was here that he managed to

ascend Mata Peak (20,608 ft, Mentok Kangri), one of the highest points he ever reached that we know about. The following summer, he was back in Ladakh, exploring and mapping the large brackish body of water know as 'Lake Pangong.' The western two-thirds of the lake were situated in Kashmir and the eastern one-third was in Tibet. While Godwin-Austen had been surveying lakes in southwestern Tibet, some 4,000 miles to the southwest, John Speke was able to confirm that Lake Victoria is the source of the White Nile.

By early 1864, Godwin-Austen was in Bhutan with the Eden Mission, which turned out to be a diplomatic disaster. Nevertheless, he stayed on during the remainder of the winter and surveyed the southern border, which it shares with India and had at the time been under dispute. Later, he would conduct several surveys in southern Assam and western Burma.

Godwin-Austen was a dynamo when it came to surveying; during his career in the Karakoram-Himalaya, he had covered a tremendous amount of ground and was one of the first Europeans to penetrate many of the valleys and glaciers of the western and central Karakoram. One interesting aspect of all of this is that Kenneth Mason, who we will meet much later in this narrative and who was also a surveyor with the Survey of India some sixty years later, related that Godwin-Austen was told by his superiors that he did not have to bother surveying terrain above 15,000 ft because it was inhospitable. This was in sharp contrast to the work which was just summarized regarding his two summers in the Karakoram, where he spent a considerable amount of time doing just that. In 2013, his biographer, Catherine Moorhead, pointed out in her book how much time he spent above 5,000 m (16,400 ft). We also know that he ascended above 20,000 ft on at least four occasions, possibly more. Godwin-Austen was awarded the Royal Geographical Society's Founder's Medal in 1910 in recognition for his surveying and exploration in the Karakoram.

Godwin-Austen was much more than a map-maker; he was a very good artist—sketching and painting landscapes with his watercolors. In addition, he became very well known throughout the scientific community for his work with freshwater mollusks, identifying and collecting them. He was also a respected ornithologist; in essence, Godwin-Austen was one of the first naturalists to shed light on the hidden mysteries of the Karakoram. He died in 1923 after a most successful career.

Chapter 5

Younghusband: Explorer, Politician, Eccentric

The next major player on the scene in the Karakoram-Himalaya after Godwin-Austen was Francis Edward Younghusband. In his younger days, he was another indefatigable explorer; by his mid-twenties, he had transitioned into a roving diplomate; and later in life, after he moved back to England, he became a patron and elder statesman of the mountaineering community.

Younghusband was born in 1863, in the hill country of Murree, British India, which is today located in Pakistan, some 40 miles east of the capital, Islamabad. His father was a major-general in the Indian Army. The young Francis, however, was taken back to England at an early age for his upbringing and education. His school years were normal for a youth of his social standing. Later, he attended Sandhurst and was commissioned in the 1st Kings Dragoon Guards (Rawalpindi) in 1882 at the age of nineteen.

Although he had done some hiking and scrambling in the Swiss Alps as a youth, his first taste of the Himalayas occurred in the mountains surrounding the Vale of Kashmir. With two months leave from the Army, he spent the time scrambling over a wide swath. This excursion only heightened his desire to explore farther afield; but then this spirit for serious adventure ran in the family. His uncle, Robert Shaw, had been a prominent player in the Great Game during the second half of the 19th century. Shaw had been one of the first Englishmen to cross the Himalaya (a feat he repeated several times) and visited the fabled cities of Kashgar and Yarkand in what was then called Chinese Turkestan. Later in his career, he became the first English Commissioner at Ladakh.

While in his early twenties, Younghusband traveled to Dharamshala, India, where his now-deceased uncle had resided for decades. His house and personnel effects were still there when Francis paid a visit. The want-to-be explorer spent many hours poring over the maps that his uncle had collected and rummaging through the papers he had authored. In addition, while visiting Dharamshala, Younghusband was able to talk to a number of men who had lived and traveled with his uncle. Of course, all of this only fueled his innate desire for travel and adventure. Francis wanted to figuratively and literally follow in the footsteps of his uncle. As it turned out, the Army was willing to oblige; after returning from Dharamshala, he did not have to wait very long for his first opportunity for government-sanctioned adventure.

Being an officer in the Indian Army in those days meant considerable travel for those who wished it, and Francis wished it in a big way. His first mission had limited scope but in time they expanded. He spent several weeks 'traveling' along the Afghanistan-India border; although we don't know what the Army had him doing on this mission, it was certainly more interesting than the routine of barrack life in Abbottabad. Shortly thereafter, he was assigned as a Gazetteer of Kashmir for the Intelligence Department. This post made him responsible for keeping tabs on all matters of geography and border relations, which of course meant that a considerable amount of travel was necessary. Once again, he did not go into detail on what his work entailed, but Kashmir was a playground between India and Tibet.

His first monumental trip, which he describes in his book *The Heart of a Continent* (1889), was "my first experience of real travelling," as in not on his home turf. Through his connections, he was invited to accompany Henry James, who was at the time the Director-General of the Indian Post-Office, on a trip to Manchuria. Francis was able to secure leave from the Army, so in 1886 he and James sailed to the Orient. Over the next seven months, the pair traveled extensively across the breadth of Manchuria. In addition, they had a brief stay in Russia as guest of a Colonel Sokolowski, just outside the border town of Novokievsk.

Eventually, the two adventurers separated and Younghusband made his way to Peking. He described the city as follows: "The only striking thing about it are the size of its walls and gateways, the filth of its streets, and the utter disregard of decency of its inhabitants." While in Peking, by sheer coincidence he met Colonel Charles Bell, his former supervisor in the Intelligence Department. Bell was beginning an east-to-west excursion across China via Turkestan and then was intent on crossing the Karakoram en route to India. Although his leave from the Army was about to expire, this was too good of an opportunity for Francis not to at least try to join the colonel's expedition. Bell readily agreed on Younghusband joining the voyage; with Bell's support, the Army granted him additional leave. The colonel proposed that both men travel different routes in order to observe as much of the country as they possibly could. At this juncture, Younghusband's private holiday turned into a government-sanctioned mission. Bell maintained his northern itinerary while Younghusband, at Bell's prompting, took a direct line through the Gobi Desert. The two men planned to meet in the town of Hami, in Turkestan, and then travel together to India.

Younghusband exited through the gates of Peking in early April of 1887, resolutely set on reaching India via Turkestan and traversing the Himalaya in the process. He crossed the Gobi Desert without any undue mishaps, supported by several local guides and eight camels. He arrived in Hami

some three weeks after Colonel Bell; the colonel had long since departed. Left to his own devices, Francis made his way to the fabled city of Kashgar, enduring the heat of July, and on his arrival he spent a few days with the Russian consulate. His last taste of civilization before plunging into the wilds of the Karakoram was in the oasis town of Yarkand, on the western edge of the Tarim Basin.

In Yarkand, a note was waiting for Younghusband from the intrepid Colonel Bell. It informed him that Bell was going to cross the Karakoram Range via the Karakoram Pass, and that Younghusband might consider using the Muztagh Pass as an alternative. In his account of this excursion, Younghusband noted that he was delighted with the prospect of such an adventure, at least at that time he was. His travels to date had been trouble-free and his good luck remained intact: he was fortunate to be able to hire a Balti guide named 'Wali,' from the village of Askole, who had been living in Yarkand for some years. As it turns out, Wali had crossed the Muztagh Pass years prior when he had traveled to Yarkand. While still in town, they purchased heavy sheepskin coats, fur hats, and new leather boots for each member of the party. Articles that they would very much need in the coming weeks. On September 8, the small caravan consisting of three Baltis, four Ladakhis, thirteen ponies, and Younghusband departed the oasis for the mysterious Karakoram.

This expedition crossed the western Kun Lun Mountains following an established track without any misfortunes befalling the party. On the south side of the Kun Luns, however, was a region occasionally visited by the Kanjuti—these were robbers who lived in Hunza. The Kanjuti would enter the region via the Shimshal Pass (15,535 ft) and then would target any caravan they happened upon. They not only stole their goods but often took hostages either to sell into slavery or to redeem for a ransom. There was no government force to patrol the region; travelers had to use their wits to outrun or outsmart the bandits. Once they had been satiated with booty, the Kanjuti would cross back over the mountains back into their isolated stronghold.

Younghusband's small expedition passed by ground that in previous decades had been mined for copper; currently the mines were abandoned due to the presence of the Kanjuti. It was also in this area that the established 'trail' disappeared; it was up to Wali to guide the party through the high mountains. They pressed on through the Aghil Mountains (more on this range in later chapters) and were rewarded with their first spectacular view of the north side of the Karakoram in the vicinity of K2 (Maps 5 & 6). While traversing the northern foothills of the Karakoram, Wali confessed that he had forgotten the exact route; in truth, it had been quite a few years since he had passed this way, and all

the terrain was looking unfamiliar to him. Since it was now autumn, they had no trouble crossing either the Yarkand or Shaksgam rivers, which can be impossible to get across during the summer melt season.

As they traveled, the views only became more and more impressive. Here is what Younghusband said regarding the view of the north side of K2, from a distance of about 12 miles: "… there must have been 14,000–16,000 ft of solid ice. It was one of those sights which impress a man forever, and produce a permanent effect upon the mind—a lasting sense of the greatness and grandeur of Nature's work—which he can never lose or forget." Some forty-eight years later, and a few miles closer to the north of K2, Eric Shipton wrote similar praise for the overwhelming view as noted in the beginning of Chapter One of this book.

Despite Wali's lapse in memory, he was able to steer the expedition in the right direction. They ventured up the rocky deposits of the Sarpo Laggo Valley and soon made their way onto the 15-mile-long glacier of the same name. This is near where Shipton and Tilman were to establish their basecamp in 1936 when they explored the Aghil Mountains and Shaksgam Basin recounted in Shipton's *Blank on a Map*. Younghusband noted that the lower glacier was very broken up and was covered with rocks on the surface of the ice. Nevertheless, they took the ponies in tow and eventually found somewhat smoother going in an ablation valley, but were eventually forced back onto the ice and ended up using the medial moraine as their path towards the pass.

Even in this early age of Karakoram exploration, Younghusband noted that there were two Muztagh passes (recall that 'muztagh' means 'ice mountain,' often spelled in early accounts as 'mustagh'). The newer pass was some 12 miles west of the traditional one, although both were accessible from the upper Sarpo Laggo Glacier. He was told that the western pass was no longer in use because it had accumulated too much ice for safe travel. The surveyor Godwin-Austen had been able to get near to the base (south side) of the Western Muztagh Pass back in 1862, but no European had been able to make the crossing of either pass to date.

On the third day since arriving on the glacier, they were able to reach the upper basin, where the terrain got considerably steeper. Two of the guides made a reconnaissance to the western pass, and on their return to camp reported that the ponies would not be able to cross. (It is unclear why Younghusband had two men reconnoiter the western pass when he was told that it was no longer in use. There is also no mention of the Sarpo Laggo Pass used by Shipton-Tilman in 1936.) To modern mountaineers, the thought of taking ponies on a glacier seems ludicrous; however, back in the day local

inhabitants would take goats, yaks, ponies, etc. over the passes when possible, which included a stint of glacier travel.

Younghusband noted the cold nighttime temperatures; remember, by this time it is well into October they were in the 15,000–17,000 ft range. They had no tents but relied on the warmth of hefty sheepskin sleeping bags. The next day, Younghusband and the guides made their way up the Eastern Muztagh Pass (17,689 ft), leaving a few men and all of the ponies behind. He noted that the climb to the pass was not technically difficult; however, the elevation and soft snow made the ascent challenging enough. We must recall that Younghusband had no prior glacier experience and the party had no climbing gear; they made do with what they had.

Although the ascent was straightforward, the descent was not. It was icy on the crest of the pass and the glacier below was broken up. On top of the pass, they could not look down the length of the descent route, but it became clear that a band of rocks on the opposite side of which they were standing would be the best place to descend. The first challenge was traversing an icy slope in traditional Kirghiz leather boots to the top of the rocks. Resourceful as they were, they tied strips of leather and cloth on the bottom of their boots in order to enhance traction. Wali, with a rope tied around his waist, led the way across the slope; he wielded an ordinary pickaxe in hand in order to chop steps for those who followed. Younghusband admitted being very nervous about the descent: “I inwardly shuddered at each fresh step I took.”

The party made the traverse without mishap but now had to downclimb a steep cliff that fortunately contained small knobs and projections. Below the rock was another steep, icy section, but it happened to be cleaved by three large rocks set at regular intervals. One man was lowered on the rope to one of these protruding rocks; he then cut steps in the adjacent ice for everyone else to follow. In the end, they made it down this section without injury. After spending the night on the glacier, they proceeded down the Muztagh Glacier the next day. At this point, the party of four were un-roped and sure enough one of the guides took a 15-ft fall into a crevasse. The victim was wedged in but was extracted in due course and he suffered no ill effects. From then on, however, they wisely traveled roped together. That night, they camped on bare ground along the margin of the glacier and were even able to get a small fire ignited.

The following day, the party reached the confluence of the Baltoro Glacier, and Younghusband looked up the Baltoro with considerable anticipation; however, they were out of supplies and their

boots were worn out. Francis and his three comrades hobbled back to what must have seemed to them as a 'metropolis', Askole, the nearest village. En route, Francis almost drowned when the porter who was carrying him across a raging stream slipped. It is unclear why he was being carried, but he did note that his feet were giving him a lot of trouble at that juncture. In Askole, they quickly recovered from their sore feet and depredations of the past weeks.

Recall that a handful of men and the ponies were left on the northeast side of the pass. Younghusband hired a small party of men from Askole to take supplies back over the pass to these men, which was promptly carried out. The men with the ponies then retraced their route down the Sarpo Laggo Glacier and crossed the mountains via the relatively pedestrian Karakoram Pass. The entire party made it safely to Leh despite the difficulties. Younghusband became the first-known European (or first non-local) to cross the Eastern Muztagh Pass. The relief party from Askole seemed to have no difficulty ascending and then descending the eastern pass on their rescue mission. Later explorers were to find evidence of rock shelters on the slopes to the east of the Muztagh Glacier, evidence that the eastern pass had been a relatively well-used route to Turkestan in previous times.

While in Askole, Younghusband persuaded Wali and a few additional locals to join him on a trek to investigate the Western Muztagh Pass. In his book, he noted that the men from the village, despite living their entire lives amidst these giant mountains, seemed to be quite "in dread of the mountains." This statement seems in sharp contrast to the fact that the men hired for the relief mission had no problems whatsoever on the ice. It is possible that a small cadre of shepherds 'enjoyed' wandering up and down the steep terrain with their flocks, while the majority of the population had no use for the mountains.

Nevertheless, the small party pushed onwards, making their way up the Punmah Glacier. On the third day, as they reached the confluence of the South Chiring and Chiring glaciers, they hit an impasse. "Evidently there had been an immense ice-slip on the glacier, and gigantic blocks of ice were tumbled about one on top of another in a way which made it perfectly impossible for any footing on the glacier." They knew the game was up, so wisely turned around for Askole. Younghusband did not divulge why he refrained from proceeding up the Baltoro Glacier, which it seemed he'd had on his bucket list, but had instead opted for the Punmah Glacier in its place.

This abortive venture seems to muddle the waters even more regarding which pass was currently the main one in use. The best supposition is that in previous generations the eastern pass was

the main route, but by the time of Younghusband's traverse, it was much less used than it had been in bygone years. Recall that four men had traversed the western past when Godwin-Austen was below it several decades prior to Younghusband's crossing, so it is certainly possible that the western pass was the primary one in use. It is also possible that Wali confused the western from the eastern pass when he recommended the eastern pass over the western, saying that the latter was no longer in use. The crossing of the Muztagh passes will appear in subsequent chapters, so I will defer additional discussion until then.

In the final analysis, Younghusband has to be given a significant amount of credit for his leadership skills and tenacity. Crossing China and then traversing an extremely rough, uninhabited, mountainous region without any previous mountaineering was bold to say the least. This was compounded by the fact that the party lacked proper equipment (besides the pickaxe, they each had an alpenstock of some sort); in the end, the entire party made it safely to India. In 1890, Younghusband was awarded the RGS Gold Medal, acknowledging his trip across China and the Karakoram. His uncle, Robert Shaw, had won this same medal in 1872 for his travels and scientific work in eastern Turkestan.

The Aghil Range and the Shimshal Pass

Younghusband's 1886–87 traverse of China and then the crossing of the Karakoram had only whetted his appetite for additional adventure. In the spring of 1889, he began to make plans for a traverse of Tibet, but the Army declined his petition for a leave of absence. This was only a temporary setback, as several months later, the Indian Foreign Office asked him to investigate the ongoing Kanjuti raids that were occurring in the region to the northeast of K2, that is the middle-to-lower sections of the Shaksgam River Basin. This region is where the Tibetan Plateau meets the Pamir Plateau, which at the time was under nominal control of the Chinese. Kirghiz traders, the primary targets of the Kanjuti, had appealed without effect to the Chinese Government, so they opted to plead their case to British India. Since it involved trade and was in a region of interest to the British, the Foreign Office decided to have Younghusband look into the matter. Tensions had also been brewing between British India and the ruler of Hunza; several Russians had been reported in the area, so Younghusband's expedition would also be a chance to wave the flag in Hunza.

Recall the discussion above that the Kanjuti lived in Hunza (the term 'Kanjuti' was used in that time period for anyone who lived in Hunza; in other words, it does not designate any one ethnic group).

The raiders would push east and plunder any caravan or small settlements they came across, and then retreat back to Hunza. The previous year, a band of eighty-seven Kanjutis had crossed the Shimshal Pass, the pass that linked Hunza with that part of the Pamir Plateau and the district of Yarkand, and had attacked a large Kirghiz caravan. Besides stealing the caravans' merchandise, they carried off twenty-one Kirghiz as well. Sometime later, the twenty-one captives were returned, but only after locals had paid a ransom of 80 rupees per head. Reports came back to India that the raiders had been armed with matchlocks, swords, and picks. Although the Indian Army had a small garrison of troops stationed at Gilgit to the west of Hunza, for political reasons they had never made any incursions into this mountain bastion. To date, only a few Westerners had traveled through Hunza.

Within this context, the twenty-six-year-old Younghusband set out on his first official government-sponsored mission in which he was the leader. He left Kashmir with only six Gurkha soldiers and a surveyor, which he infrequently mentioned in his account of this expedition. In Leh, they were joined by seventeen additional soldiers and a small contingency of camp assistants and pony wranglers. The party followed the tried and tested route to the Karakoram Pass and then headed north-northeast; by late August, they arrived at Shahidula, a collection of Kirghiz yurts in the Yarkand Basin. After a brief pause and the addition of several Kirghiz guides, the party—which by now included a number of two-humped Bactrian camels—set out across the Aghil Mountains. Once they had crossed the Aghil Pass (15,764 ft) and descended to the Shaksgam River, Younghusband could not resist the opportunity for some exploration; the military portion of the expedition would just have to wait.

With a handful of men, Younghusband moved southward along the upper reaches of the Shaksgam River (he often referred to the Shaksgam as 'the Oprang'); the remainder of the men and baggage remained in camp. By now it was late September and the volume of water in the Shaksgam had dropped considerably from its higher summer levels. Since all of the major rivers in this region are glacier-fed, cooler fall temperatures make a big difference in travel. Since there are no bridges whatsoever, all the rivers have to be forded, either on foot or on the back of an animal.

In short order, they came across a glacier of considerable size that nearly stretched across the width of the valley in which they were traveling (North Gasherbrum Glacier). They were able to move through a narrow gap between the wall of the valley and the 150–200-ft-high ice terminus by wading in the river. Just ahead, they encountered a similar situation, but this time it was the terminus of the Urdok Glacier. Younghusband was in search of a pass (Saltoro) that was first mentioned by Vigne half a century prior. This purported pass connected Baltistan with Turkestan and was located between the East

Muztagh Pass and the Karakoram Pass, but that is all he knew about it. No maps of the day indicated such a pass. He did enlighten the reader why he thought the pass was at the head of the Urdok Glacier; his guide had indicated several days prior that it was in that general direction.

The men and the ponies moved up the left side of the glacier; by the end of the day, Younghusband could look up the remaining length of the glacier and see a low spot on the ridge, which he assumed was a pass. Whether it was the sought-after pass he was not sure. They spent the next three days struggling up the ice; eventually, they were able to camp at the base of the steep headwall, which provided access to the ridge and hence to the supposed pass.

The next day, Francis and a couple of men made a 2 a.m. start for the pass. At first, they encountered soft snow, but higher up snow gave way to bare ice. At some unspecified distance below the pass, the party confronted a massive bergschrund, and there was no way over or around it. They decided to descend. It had been snowing quite heavily when the first of a series of avalanches swept the slope they were descending. Younghusband appears to have been a bit unnerved by these, as he should have been; he noted that he was glad once the party was well clear of the white menace.

As it turned out, the upper Urduk Glacier lies to the north of the ridge which separates it from the upper Siachen Glacier; this section of the ridge was explored by the Workmans in 1912, that is twenty-three years later. The Workmans noted several passes or cols, which they ended up naming and climbing to the top of one from the Siachen side (the west). When Younghusband visited the area, no European for sure, and possibly no locals had made this crossing; in addition, these passes had no names. This illustrates the poor nature of maps at that time; in fact, Shipton-Tilman and associates were still clearing up the geographical complexities of the Karakoram in the late 1930s. (See discussion at the end of the 1912 Workman expedition regarding these passes, as well as the confusion surrounding the location of the Saltoro Pass.)

By the third week of September, we find that Younghusband was reunited with his troops, and the entire contingent resumed their trek towards Hunza. After several days, they turned west up the Sarpo Laggo Basin and set up camp at a place called ‘Suget Jangal,’ where he had stopped in 1887 (this is nothing more than a collection of rocks, but there is some limited grazing for the animals). It is there that Younghusband believed the Shimshal Pass lies up at the head of a long glacier that was in view to his northwest. He even said that the map he was using indicated the pass was there. The Kirghiz guide insisted that the pass was not at the head of this glacier, that in fact, it was well to the north—which it

is. Whether Francis really believed that the pass was there or whether he was trying to justify his actions years later when he wrote about it, we don't know. We do know for certain that whatever map he was using would have just contained white space, as this region had not been surveyed. I tend to think that he just wanted to explore the area; one glance at the rough terrain would indicate that the area was no superhighway for bandits.

Younghusband left some of the men at camp but took twelve ponies and about twelve days' worth of supplies and headed up the glacier, which he subsequently named Crevasse Glacier (certainly descriptive but not a good omen). As on the Urdok Glacier, traveling was difficult for man and beast. On the second day, for example, in a heavy snowstorm, they inadvertently managed to get off the main body of ice and onto a tributary glacier; after realizing their error, they found their way back to the Crevasse Glacier. At times, Younghusband and another man would attempt to scout ahead without the ponies, but the glacier was just too broken up for rapid travel. After a few days of tough-going on the glacier, he thought that if his party could get to the margins of the ice, they could proceed up-valley along the unglaciated slopes, but that was not feasible, either. After six days of struggling and in the midst of a heavy snowfall, he did an about-face.

He did not regret his time spent on the ice and waxed eloquently about the surroundings despite the almost continuous snowfall and poor visibility. He noted that the glacier seemed to be, as he phrased it, "retiring"; that is the terminal moraine was several hundred yards in front of the current ice front, indicating that the glacier had been retreating for some time. In addition, he noted that scourer marks on the valley sidewalls indicated that ice in previous times had been well above current levels. He estimated the glacier to be 24 miles long and about a half to three-quarters of a mile wide.

After a day of rest at Suget Jangal, the party en masse continued its march down the Shaksgam Basin. Despite the cooler autumn weather, the river was starting to give them trouble when they were forced to cross it—eleven times on one particular day. Although glacier melt was reduced, the farther downstream they traveled, the volume of water in the main channel was enhanced by inflow from various tributaries. The safest way to cross was on a Bactrian camel; however, even at times the camels struggled in the strong current.

Francis led the expedition to the confluence of the Shaksgam with the Yarkand River, where he had made arrangements to be resupplied prior to the start of the expedition. When they arrived, no one was there to meet them. The next day, a Kirghiz arrived with a note saying that a certain Captain Durand

from the Indian Army stationed in Gilgit had recently visited the Hunza Mir (title for the local leader), whereupon the captain had told the Mir of Younghusband's planned visit. The Mir assured the captain that the Younghusband expedition would be welcomed in his territory. The much-needed supplies arrived a few days after the note, so the party departed for Shimshal Pass on October 11.

Five miles up the Shimshal Valley, they reached a Kanjuti outpost with the name of 'Darwaza' ('the gate'). At this point, the valley was narrow: on the right was the Shimshal River, on the left a precipitous mountain slope—a ravine cut transversally across the valley. Two towers guarded a zigzagging path that led across the ravine and up the opposite slope to a narrow pass (not the Shimshal Pass). The path led through a gate in one of the towers. Although they could not see any Kanjuti, there was smoke emanating from one of the towers. Younghusband looked the situation over and decided to proceed with two interpreters and a Gurkha soldier, who insisted on taking the point. The remaining soldiers took up positions on top of the cliff in order to cover the party as needed.

As the four men approached the gate, the door slammed shut and a number of armed men with matchlocks appeared on the wall above; they began to yell and gesticulate. Younghusband stopped his advance and motioned for someone to come out of the tower, which eventually someone did. After a discussion with a Kanjuti representative who had come down the trail, Francis was convinced that his party would be well received and not ambushed. The expedition personnel moved through the gate and after a brief meet-and-greet session around a fire, they rode another 3 ½ miles up-valley, where they camped for the night.

The next morning, after a short walk, they reached Shimshal Pass, which consists of a nearly level plain. Younghusband described it as, "a wide trough between high mountains on either side." He fixed the elevation at 14,700 ft (actually 15,535 ft); there was no snow in the pass on October 15 but they did find two small lakes and a number of shepherds' huts. Younghusband was definitely struck with the easy crossing; he had been anticipating rough terrain. Several miles west of the pass are the beginnings of a very narrow valley that forms the western approach. The Mir of Hunza had sent a messenger bearing an invitation into the region; Younghusband had considerable bravado, and sent a reply to the Mir that he wanted to explore the eastern Pamirs before venturing through Hunza on his return to India. The Mir would just have to wait a few additional weeks.

From here, the expedition retraced its movements eastwards from Shimshal Pass and then traveled northward towards Tashkurgan via the Kurbu Pass (~14,600 ft). North of this pass, the terrain

opens up in typical Pamir Plateau fashion, quite a change from the confining nature of the land they had passed through for the previous two months (they were now just northeast of the Karakoram). While en route northward, Younghusband by chance met Captain Grombtchevsky, a well-known Russian (Army) explorer, who as it turned out, had trekked through Hunza the previous year.

Younghusband then led his party up the eastern approach to the Khunjerab Pass (15,397 ft) and spent some days in the area chasing *Ovis Poli* and getting a look at the land. He had one more item on his agenda prior to moving into Hunza. He decided not to use the Khunjerab Pass but instead took the party northward and then westwards in order to make the crossing into Hunza via the Mintaka Pass (15,449 ft), some 35 miles to the northwest. He sent many of the retainers home at this point but kept the soldiers. What is left of the expedition then crossed the pass in a snowstorm; all we are told in Younghusband's narrative is that both the ascent and descent were steep but otherwise not difficult.

He made his way down the valley towards the primary track, which follows the Hunza River. At that time, as now, you can turn left and head up to the Khunjerab Pass along the Khunjerab River, or turn right and head south towards Hunza's main settlement, Baltit (Karimabad, the main town today, encompasses Baltit). The party went south and shortly thereafter Younghusband—in full military dress—met with the Mir, who went by the name of 'Safder Ali.' The explorer-cum-diplomat, after some formalities, brought up the subject of the Hunza raiders; the Mir acknowledged that he had commissioned these raids as a way of raising revenue. He also indicated that if the Government of India wanted him to stop these raids, they would have to reimburse him for any loss in future revenue. Captain Younghusband noted that the Mir seemed to think that his Russian, Chinese, and British neighbors were tribal bands much as his own peoples. Francis was confounded on how to deal with a ruler who had such limited and archaic understanding of the geopolitical situation. After a number of meetings between the Mir and Younghusband, the latter decided to leave for Gilgit; he made no promises to the Mir and had to leave the matter of the raiders as unfinished business.

The expedition made its way to Gilgit and then ultimately back to Kashmir, arriving in mid-December. As it turned out, within two years (by 1891) the Mir was expelled from Hunza when the Indian Army invaded this mountain bastion. His half-brother Nazim was installed as the new Mir under British occupation. Younghusband returned to Hunza for a more extended excursion in 1892.

In retrospect, this expedition was a mix of exploration and diplomacy, with exploration at the forefront. That is not to say that the twenty-six-year-old Younghusband did not take his diplomatic

mission seriously—he was actually quite good at it. It was not any fault of his own that the Mir was obtrusive. This extended expedition did show that the junior officer was a good leader of men, not only in good times but when the chips were down as well. We have to keep in mind that a good part of this and other government-sanctioned missions was to simply show the flag along the border, as the Great Game was in its heyday. When it came to exploration, although not a surveyor or even that proficient at geographic analysis, Younghusband did add a small area to the 'known world.' He ventured in the upper Shaksgam Basin, including the Urdok Glacier and the eastern approach to the Shimshal Pass—the first Westerner to do so that we know of.

I find it curious that in his account of the expedition, Younghusband did not mention the surveyor or his work. For someone who desired to become an explorer, I would expect that he would have wanted to learn as much as he could from a professional surveyor. It is possible that he did interact, but did not mention it in his narrative, or he might have viewed this man as competition and ignored him as much as possible. After two significant expeditions, Younghusband was on his way to becoming one of the more noted explorers of his time.

As it happened, in 1890 Francis was asked by the Government of India to travel through the Pamirs on its behalf. He traveled in the company of another British subject, but with no military escort. Although various Europeans—including a few Brits—had ventured through the region that was becoming dominated by the Russians, his superiors were interested in obtaining the latest intelligence. Since the Pamirs formed the northern border of British India, it was important for policy makers and strategists to keep abreast of Russian influence and designs.

Younghusband left Leh and made the trek via the Karakoram Pass to Yarkand in good order. He and his companion spent the summer and fall crisscrossing the Pamirs, taking note of Russian influence and the attitudes of the various Turkic inhabitants. By November 1, he re-entered China and wintered over in Kashgar. During his time there, he mingled with diplomatic types in an attempt to access the political mode of the players of the Great Game. He spent much of his time with the Russian Consulate-General, who he was on good terms with. It was during the winter that the great Central Asian traveler, Sven Hedin, passed through Kashgar, meeting with Younghusband during this stop. The following summer, Francis returned to India via the Wakhan Corridor (Wakhjir Pass, 16,152 ft), trekking through western Hunza and on to Gilgit.

By now, Francis Younghusband had established himself as not only an explorer, but his government had acknowledged his political acumen. In 1892, some eight months after the Indian Army had invaded Hunza and forced the Mir to seek asylum in China, Younghusband was assigned as the political agent of the region. He noted that the inhabitants were very friendly towards the British despite the recent war and occupation. (It was not much of a war; the Mir fled to Turkestan and the Brits took over with little in the way of bloodshed.) His posting to Hunza, however, was short-lived, as he was reassigned to Chitral, where a number of local bands were stirring up political unrest. The agitators were dealt with by the Army and a level of peace was restored. It would be safe to say that Chitral has always maintained the reputation of being unrulily; even into the 21st century, the Pakistani Government lets the locals have a wide berth. It was during his time in Chitral that Francis met a young Lieutenant Charles Bruce, who was on his way to becoming one of the most well-respected mountaineers. Bruce introduced Younghusband to mountaineering by teaching him the use of ropes and how to wield an ice axe. The twosome was able to find the time for several short climbing excursions in central Chitral.

With his stock ever on the rise, in December of 1903 Younghusband was chosen to lead the 'delegation' to Lhasa in order to work a trade deal with the Dalai Lama and to pre-empt any rumored incursion of the Tibetans into northern India. This was not your normal negotiating delegation—besides Younghusband's team, there were a 1,000-plus military force under the command of a General James Macdonald. The main problem from the British perspective was the disregard of the agreements signed in 1890 and again in 1893 with the Chinese. Those two agreements outlined the location of the international border between India and Tibet, recognized that Sikkim was a British Protectorate, and finally, ensured the establishment of free trade between India and Tibet, including a trading mart in the Tibetan town of Yatung. The core of the problem was that the Tibetans never signed those agreements; it had been their on-again, off-again Chinese overlords who had signed. So, when the Tibetans broke the agreements, it infuriated the Viceroy of India (Curzon), who then got permission from London to send the delegation into Tibet in an effort to iron out the problems, with military force if needed.

As it turned out, the delegation took over seven months to reach Lhasa, as the Tibetans were resisting their movements towards their capital. Several battles ensued, with the Indian Army prevailing each time; many hundreds if not a thousand Tibetan soldiers lost their lives under the superior firepower of the Indian Army. There was considerable worldwide condemnation at this show of force; this was supposed to be a political mission, but it certainly appeared that the British were being the

aggressors as they forced their way to Lhasa. In any case, Younghusband was not in charge of the military aspect of the mission; what transpired on that front was out of his control.

In the end, Younghusband and the mission entered Lhasa in August 1904 (this is sometimes referred to as 'the Younghusband Mission'). The Tibetans were in no position to refuse British desires—free trade relations between Tibet and India, as well as the free passage of British subjects across Tibet. However, there was also the understanding that the Tibetans would continue to resist non-British subjects from entering their fabled land, particularly the wily Russians.

After he had returned from Tibet, Younghusband spent four years as the Resident of Kashmir. At the age of forty-seven, he retired from government service and returned to England. In the second and third decades of the 20th century, he was prominent in both the Royal Geographical Society and the Alpine Club. He was, as we will discuss in a later chapter, a major force behind the British Mt. Everest expeditions of the 1920s.

Chapter 6

Renaissance Man

What does a professor of art history at the University of Cambridge have to do with the exploration of the Karakoram-Himalaya? Generally, we would not expect any connection; however, William Martin Conway was not your typical mountain explorer—he was what we today would call a 'Renaissance Man.' He was an art historian, an accomplished painter of landscapes—mainly in watercolors—and let's not forget that he was a politician, serving as a Member of Parliament in the 1920s. Prior to his academic and political life, mainly in the 1890s, Conway was an explorer and mountaineer. He obtained his passion for serious mountaineering, like so many other British subjects, in the Alps.

William was born to middle-class parents; his father was a preacher in Kent. The boy developed a love of art at an early age, which obviously he never lost. He was schooled at Cambridge, an institution to which he would later return to be a professor of art. Conway began life with many advantages over those around him, and he was not to disappoint. He hiked and climbed in Switzerland during his school holidays, and in time hiking and climbing became his passion. He also married an American heiress, which gave him the financial freedom to explore his many and varied interests.

As a result of his time spent wandering far and wide across Switzerland, in 1891, at the age of twenty-five, he published a guide book entitled *The Zermatt Pocket Book*. In 1892, Conway organized and led an expedition to the Karakoram, which we will summarize shortly. Two years after his Karakoram expedition, he made an east-west traverse of the Alps, which he wrote about in *The Alps from End to End* (1895). Not long after, he was in Spitzbergen participating in the first crossing of the archipelago, on which he wrote *The First Crossing of Spitzbergen* (1897). Then he found his way to the central and southern Andes, where he climbed Aconcagua in Argentina, as well as mounts Illimani and Llampu in Bolivia, which gave him material to write two more books, published in 1901 and 1902.

He went on to spend time exploring Tierra del Fuego. He also wrote a retrospective about his adventures entitled *Mountain Memoirs*, which was published in 1920. He gave up mountaineering as a 'profession' in 1901 but served as President of the Alpine Club from 1902–04. It was after his mountaineering phase that he turned to art and politics as his newest avocations. He was also knighted in 1895 for his exploits in the Karakoram, of which we will now turn our attention.

The primary goal of Conway's Karakoram expedition was to improve the map published by the Survey of India, which by this date contained the major topographic features of the western and central Karakoram, but was lacking in detail. Godwin-Austen had been up the lower half of the Baltoro Glacier in 1864, but never got close to K2 or the glacier that was decades later named after him (it is south and east of K2). Younghusband had traversed East Muztagh Pass in the Central Karakoram five years prior to Conway, but he did not conduct a survey—he was 'eyes only.' Hence there was still a lot of unknowns about this part of Karakoram topography.

In addition, like many expeditions that were to follow Conway's, members of his expedition collected data on the flora of the region they traversed; they also took meteorological observations, and collected data on their own physiology—mainly pulse rates observed at various altitudes. They also observed the geology and geomorphology, but found time as true men of science, to note the various types of butterflies that flew across their path. Despite all of the science, it becomes apparent from Conway's account that a major motivating factor in this seven-month adventure was to observe nature—in this case, some of the most impressive mountain landscapes on earth.

Conway had no problem recruiting well-established talent to share in his adventure. First, he asked the enigmatic Oscar Eckenstein from London (of German father and English mother), who later went on to lead his own expedition to K2. Eckenstein is given credit for developing the 10-point crampon (minus front points) and refining ice axes of the day by making them shorter. Conway also recruited Matthias Zurbriggen, a Swiss Alpine guide who in 1897 was a member of the expedition that made the first ascent of Aconcagua. The third European member was Charles Granville Bruce, who at that time was a lieutenant in the 5th Gurkha Rifles of the Indian Army. As we saw in the previous chapter, this is the same Bruce that taught Younghusband how to climb. As we shall see, he participated in many of the early expeditions in the region and later was appointed leader of the 1922 and 1924 British expeditions to the north side of Mt. Everest. Additional expedition members were an artist named McCormick and a friend of Conway's, Joudebush. We know the details of this expedition because Conway, who was a prolific writer, wrote a book entitled *Climbing and Exploration in the Karakoram-Himalayas*, published in 1894.

In the winter of 1892, most of the expedition members traveled aboard a steamship from dreary England to subtropical India via the Suez Canal. Both passengers and their considerable volume of baggage arrived intact in mid-March. Bruce, who was of course already in Abbottabad, where he was billeted, was able to recruit (due to his rank as an officer) four Gurkha soldiers as expedition members as

well. The real travel began once the expedition left the Vale of Kashmir in mid-April. They trekked on a northerly course that took them over the Tragbal (11,564 ft) and Burzil (13,451 ft) passes to the village of Astor and then to the garrison town of Gilgit.

They encountered their first natural obstacle on the Burzil Pass, which was at that time of year still covered in deep soft snow. Poor visibility on the pass added to the route-finding difficulties; fortunately, a young porter who had traversed the pass in recent months was recruited to lead the way through the fog. Once clear of the pass, the remainder of the trek to Gilgit was uneventful; the weather only allowed brief glimpses of the surrounding peaks, including the massive east face of Nanga Parbat (26,659 ft).

The party spent a number of days in Gilgit with the local Army garrison acting as hosts. The expedition's first major objective was the region south of Rakaposhi (25,551 ft)—the greater Bagrot Valley and associated glaciers. During this period, a number of the European members contracted various short-lived illnesses, which put limits on manpower; in addition, the weather in May was primarily stormy, restricting what could be done with regards to the survey. Nevertheless, Conway and Co. were able to venture onto the Bagrot and Gargo glaciers; they were probably the first non-locals into this region, and when on rare occasion the clouds parted, they were able to tackle the surveying.

Returning to Gilgit in early June, they only spent a couple of days resupplying and getting themselves reorganized for the main thrust: a traverse of the Hispar and Biafo glaciers, which would take the expedition from Hunza to Baltistan. Hunza had been occupied by the Indian Army the previous December, so the expedition members were a bit anxious regarding their reception by the populace. As the Brits found out a few days later, as they moved along the Hunza River, the party was warmly received by the local communities. In reality, the starting point of the traverse was just south of Hunza, in what was Nagar ('Nagyr' is the old spelling)—a very small principality with its own ruling family, the patriarch being the local Mir (this was a different Mir from the one who ruled in Hunza).

Conway was in no hurry to get onto the Hispar Glacier. The expedition took four weeks to travel from Gilgit to the terminus of the glacier. Most of this time was spent in the valleys above the villages of Nagar and Hopar, just to the east and southeast of Rakaposhi. Conway noted in his account: "If there was little to eat in Hunza there was plenty to look at …" The expedition had some trouble securing supplies in Gilgit and once they were in Hunza proper, basic foodstuffs were no easier to procure. Nevertheless, they trudged onwards and upwards. Trekking in the desert-like conditions of the major

river valleys in mid-summer was no walk in the park. It was very hot and frequently very dusty as the wind tended to loft glacial silt skywards. One of the ironies of the Karakoram region in general is that during the summer there is quite a lot of running water; most of it, however, happens to be glacial melt, essentially brown mud, hence it is of little value to drink or bathe in, at least to Western travelers.

Conway did conduct some basic ethnographic surveys as the expedition passed through villages that straddled their route. He also took note of the local flora, forming a comprehensive list by the conclusion of the expedition. Conway noted the superb canal system in Baltit that allows the inhabitants to grow crops in their terraced fields despite the meager 5–7 in. of rain that falls each year.

Above the village of Hopar, located 5 miles southeast of Baltit, the expedition spent several weeks exploring the Barpu Glacier system and set their sights on climbing a small peak at the head of the glacier; they named it 'Saddle Peak,' which is part of the Chogo Muztagh. The climbers spent several days moving towards its base but were never able to make a serious attempt, as the glacier was just too broken up for them to proceed. The weather had unfortunately not improved at all with the arrival of summer; nevertheless, despite the persistent cloud cover, a fair amount of survey work had been accomplished. Conway's detailed map of the region was starting to take shape.

It was now time for the main event, the north-to-south traverse of this part of the range. En route to the Hispar Glacier, the expedition nearly met disaster; a substantial mud avalanche (three iterations occurred over the course of a few minutes) nearly swept them away as they crossed a narrow side valley. By July 11, the expedition started up the Hispar Glacier (30 miles long) accompanied by a local guide and several dozen porters. The day before, from a ridge well above the glacier, Conway noted that the gradient of the glacier appeared to be very gradual and lacked hummocks. Fortunately, there were no discernable icefalls evident from Conway's vantage point. He also estimated that the first 20 miles or so were covered by rubble (supraglacial moraine).

The guide led them across the terminus to the south (right) bank, hence the first few days they spent trekking off the ice on the adjacent slope. Despite the desert-like climate at this elevation, they came across wild roses, currants, forget-me-nots, and other wildflowers thriving along their route. They also came across a number of stone shelters, giving evidence that shepherds and hunters used the area from time to time. The surface of the ice was in places covered to such a depth with rock and soil that small patches of grass and other plants were sprouting. Like most of the large, low-gradient glaciers in the Karakoram, Conway noted that the Hispar contained many supraglacial lakes and streams.

Meanwhile, Bruce and Eckenstein had left the main expedition in the village of Hispar on June 29. Bruce's departure was motivated because of his desire to take a different route southward; he would, however, rejoin the main body of the expedition at a later date. Eckenstein, on the other hand, wanted to leave the expedition permanently. These two worked their way up the south bank of the Hispar Glacier but then veered due south onto the Haigutum Glacier, a major tributary of the Hispar. Their goal was to cross the Nushik La (16,371 ft) and continue the trek down into Baltistan via the Kero Lungma Glacier. Godwin-Austen had explored the south side of the Nushik Pass in 1861, and in 1864 Cunningham had taken a look at it from the south as well. Neither one of these explorers had ventured on the north side of the pass, as it was deemed very steep and difficult to descend. Native lore at that time stated that locals used to traverse the pass with some frequency and even take their cattle across, but not in recent decades.

With an old man for a guide and a number of local men acting as porters, Bruce and Eckenstein did indeed find, due to snow conditions, that the north side of the pass was quite treacherous. They prevailed in the end, but had to chop a hole through a menacing cornice on the ridge and then climb through to reach the pass; the south side, however, was an easy descent. The two climbers had no difficulty trekking down the Kero Lungma Glacier, which they followed towards the village of Arundo, and from that point there was a well-worn path down the Shigar Valley to Skardu.

Bruce stayed in Baltistan hunting while the main body of the expedition made the traverse. Eckenstein called it quits—he had been ill for much of the time—and headed back to Europe. Although Conway did not mention it in his book, he did not get along with Eckenstein, as these two Brits had diametrically opposed views on climbing and politics. One then wonders why Conway asked Eckenstein to join the expedition in the first place? Ten days after Bruce and Eckenstein had splintered off from the main body, two additional European members went over the Nushik La, and they had an equally difficult climb. Roudebush had to return to Europe because of pre-engagements, while Zurbriggen would rejoin Conway on the Hispar Glacier with additional supplies that he was able to purchase in Askole.

On day five of the Hispar traverse, Conway and the remainder of the expedition finally reached bare ice, the first they had encountered on the glacier. However, the trials and tribulation of trekking over surface moraine was replaced with a new challenge: nearly continuous hummocky ice: ridges and troughs some 40–50 ft deep did not allow for a straight-line route. In addition, they now entered the zone where surface streams and ponds were abundant; some of the streams were in reality raging torrents. The streams might be narrow and only a few feet deep but they were moving with significant

velocity; a climber certainly did not want to fall into one. As they plodded upwards towards the Hispar Pass, the weather was almost continuously stormy. The low-gradient ice they had been traveling on finally gave way to a sharp rise, which formed the upper plateau of the glacier. They were still below the Hispar Pass, but for some reason Conway at this juncture was expecting to be able to look down the valley filled by the Biafo Glacier.

Shortly thereafter, they crested the pass and were on the edge of a vast snow basin or what Conway called a “lake of snow.” He did not tell us why he likened it to a lake, but with a parting of the clouds, he did describe the view: “It was beyond all comparison the finest view of mountains it has ever been my lot to behold, nor do I believe the world can hold a finer one.” This was the ‘Snow Lake’ that the Workmans would visit in 1905, as well as Tilman on the 1937 Karakoram expedition. Conway recorded the elevation of the pass at 17,650 ft (the actual height of the pass is 19,521 ft) and fortunately the weather had temporarily cleared; it was an auspicious moment for the expedition.

This is indeed one of the world’s great Alpine settings, even for a jaded mountaineer. It is the contrast between the expansive, nearly level snow plateau, and the rock needles and arêtes that tower some 6,000 ft above, that makes the view what it is. From Snow Lake, the expedition made its way down the 42-mile-long Biafo Glacier. The expedition’s leader found the Biafo Glacier to be “broader, leveler and more impressive” than the Hispar Glacier. What really impressed him were the surrounding peaks; he named the largest on the north ‘The Ogre’ (Baintha Brakk I, 23,897 ft, first ascent in 1977 by a British expedition. This was Doug Scott’s and Chris Bonington’s harrowing mis-adventure).

Several days later, on the lower Biafo, they ran into soft snow and a plethora of supraglacial pools of water, which they did not always manage to avoid. Conway and his assistant continued the survey work as they slowly descended. They noted a curiosity: many hundreds of glacier tables had toppled over, as if the glacier had shuddered or moved suddenly in recent weeks (this phenomenon was probably due to an earthquake). Glacier tables are essentially pedestals of ice with a large rock on top. The rock insulates the underlying ice to some degree; as the ice on the periphery melts down during the summer months, the pedestal begins to narrow, in some cases forming a thin neck with a large multi-ton rock balanced on top.

Conway’s party reached the terminus of the Biafo on July 26, taking some fifteen days for the traverse. Once they had dropped down to the lower elevations of the Braldu Valley, they scurried out of the scorching sun to Askole as quick as their legs would carry them. Bruce, who had been as far south as

Skardu in recent days, was waiting for the expedition at Askole and had occupied his days hunting for ibex.

Four days were spent at Askole recouping and securing supplies. The expedition, including Bruce and his dog Pristi, headed up the Braldu Valley towards the Baltoro Glacier. Pristi had accompanied his master over the Nushak Pass without mishap; this dog knew how to navigate the complexities of glacier travel, as we shall see.

The party that left Askole included some ninety locals, mainly porters but some dignitaries (village elders) as well. Besides the four Europeans, four Gurkas, and one dog, there were twenty sheep and twelve goats. Taking meat on the hoof was a common occurrence on those early expeditions. Trekking past the terminus of the Biafo Glacier again, Conway stated that the glacier had retreated approximately a quarter of a mile since Godwin-Austen had seen it thirty-one years earlier. He came to this conclusion based on the fact Godwin-Austen noted that in 1861 the glacier extended completely across the valley, with the river flowing beneath it.

It took the expedition four tedious days to snake its way up the Braldu Valley; it was very hot and barren, as are all such low-elevation valleys in Baltistan during the summer months. Just short of the terminus of the Baltoro, they came across the remnants of a small settlement (Poiu) where in past decades the locals had lived while they were panning for gold, also noted by Godwin-Austen. Even though the gold had long since played out, in Conway's day there were apricot trees, willows, grass, and even some sprouting corn.

Conway noted that the lower section of the 39-mile-long Baltoro Glacier is similar to the Hispar Glacier—hummocky, most of the surface covered with rock and dirt, with countless rivulets and small lakes. They had 'enjoyed' a number of hot, sunny days on the approach but now—once they had trekked onto the ice—the clouds and precipitation returned. They dumped a large amount of their supplies at 'Storage Camp' near the confluence of the Muztagh Glacier with the Baltoro. It was there that they spotted wildflowers growing in a section of the medial moraine.

From an adjacent vantage point, they were given their first glimpse northeastwards to the upper Baltoro, where they laid eyes on "the most brilliant of all the mountains we saw"; they named it 'Golden Throne' (Baltoro Kangri III, 23,949 ft). They were smitten by its form and hence collectively set their climbing ambitions on reaching its summit. In the meantime, they made a day climb up the ridge located to the north of their camp, in the vicinity of Biange Glacier. Ultimately, they reached the crest of the

ridge at 19,400 ft under clear skies. They had been hoping to have a clear view of K2 but were disappointed when an intervening ridge blocked the view of the monster. They were rewarded, however, with an unobstructed view of the Gasherbrums' The Mitre (19,766 ft), Masherbrum (25,659 ft), and Muztagh Tower (23,897 ft, named by Conway).

Several days later, when the expedition reached the confluence of the Godwin-Austen Glacier with the Baltoro Glacier, they looked up at K2 only to view its lower buttresses; the upper mountain was encased in what seemed to them an ever-present cloud cover. When they did get an unobstructed view a couple of days later, Conway—although he did not explain why—was not very impressed with the sentential of the Karakoram. He was, however, greatly impressed with the close-up view of Broad Peak. They camped nearby and called it 'Junction Camp,' although at one point in his narrative Conway did refer to the area as 'Concordia' (~15,100 ft). Whether he named it, or it had already been named by a map-maker, is unclear; most likely the former, as this was the first group of Westerners to trek this far up the Baltoro Glacier. In any case, whoever gave it its name must have been reminded of Concordia on the Aletsch Glacier in Switzerland, and of course the name has stuck.

While the main expedition slowly advanced along the upper Baltoro, Bruce and Zurbriggen pushed ahead to reconnoiter the line to Golden Throne. From the Baltoro Glacier, the route led up the Gasherbrum and then Abruzzi glaciers to the north side of Golden Throne. (The Abruzzi Glacier is named after the Duke of Abruzzi; although the Duke never set foot on this particular body of ice, he was nearby in 1909 while attempting Chogolisa.)

The climbers had to push a route through a large icefall on the Abruzzi Glacier that turned out to be the crux of the climb. The weather continued to be poor, with periods of considerable snow accumulation. Nevertheless, they established a camp above the icefall at 19,000 ft, which they christened 'Lower Plateau Camp.' This marked the high point for Pristi, Bruce's dog; it was sent down to a lower camp that afternoon with the porters. After establishing one more camp at 20,000 ft, the climbers were in position to make an attempt on Golden Throne, or so they thought.

The morning of the climb, they greased their ankles and feet with what Conway said was "marmot fat for protection from the cold." Whatever this substance was, it did not seem to work, as hours later, he reported all of the party suffered from very cold feet. They left the glacier for a ridge on which then donned "climbing-irons" (crampons—this is one of the early uses in the Karakoram-Himalaya that we know of; they were developed by none other than Oscar Eckenstein).

On the ridge, they encountered a thin layer of snow lying on top of ice; even with the crampons, they had to resort to step cutting. Despite their cold feet, when the sun came out later in the day, they complained of being overheated. They reached their 'summit' only to find out that it was the highest point of a series of points stretched out on this long ridge. They were an estimated 1,100 ft below the actual summit of Golden Throne. They had climbed a satellite peak which they now dubbed 'Pioneer Peak,' lying to the south of the main summit (possibly Baltoro Kangri II, 23,852 ft; note that there are five summits that make up the Baltoro Kangri group, so we are not sure which one they actually attempted). Their barometer read 22,600 ft, but later they altered their elevation to 23,000 ft (Baltoro Kangri III, the highest summit in the group, was first climbed in August 1963, by members of the University of Tokyo Alpine Club).

Despite the disappointment of not reaching the primary summit and with limited views to the north towards K2—the latter was blocked by the elongated ridge of the Gasherbrums—the weather was ideal. Conway was able to deploy his plane-table and work on the survey. They spent one-and-a-quarter hours on the 'summit,' and even then found it difficult to leave, as the view was so captivating. They also took traces of their pulse rates using a device known as a 'sphygmograph.' Bruce reported in his account that the guide Zurbriggen smoked a cigar and they all had a nip of brandy before descending.

The expedition retraced its inbound route, although they had heard rumors about a pass (unnamed) that led from the central Baltoro to the upper Hushe Valley. Zurbriggen was sent on a reconnaissance to see if it was true. He reported back to Conway that he had seen a pass but said it was far too steep for the party to contemplate attempting. Whether he actually laid eyes on the Gondogoro La (18,323 ft, various spellings)—to be discussed later—or a different low spot on a ridge is unknown. In any event, the party continued down the Baltoro.

The only incidence of note was that on the lower Baltoro, when Bruce attempted to jump across a small crevasse, he fell on the ice and subsequently injured his ankle and back. He spent the next six days immobile while the main body of the expedition moved onwards. Finally, he was able to proceed very slowly, with several of his Gurkha soldiers in support. The lack of food was a major motivating factor for this small party to get back down to Askole. Pristi the dog, unlike its master, made it off the Baltoro without incident. The expedition was back in Askole on September 5. They headed towards civilization via Skardu, opting for the Skoro Pass route, then went on to Leh and eventually Srinagar.

Conway's expedition spent some seven months in the field and even though it was plagued by stormy weather, he was able to add considerable details to the map of the region. They were the first Westerners to push up the entire length of the Baltoro Glacier. They also reached an altitude in the vicinity of 23,000 ft, which in 1892 was about as high as anyone had attained. The fact that they were willing to haul a plane-table and sphygmograph up and back on to 23,000 ft shows their commitment to science. Three years after the expedition, Conway was knighted by the British crown for his contribution to geographic exploration. He did go on to explore other mountainous regions of the globe, but he never returned to the Karakoram or Himalaya.

Chapter 7

Douglas Freshfield and Co.

Many of the early explorers of the Karakoram-Himalaya—as we have already seen—were from families with 'independent means,' or in more contemporary language, 'families with money.' In Douglas Freshfield's case, both sides of his family were wealthy; he had enough money that work was an option rather than a necessity. His father was a lawyer for the Bank of England; consequently, Douglas was educated at Eton and then Oxford, where he studied law and history. His introduction to mountainous terrain was in the Italian and Swiss Alps, which his family frequented during his upbringing. While in his twenties, he made many first ascents within the Italian Alps; in 1875, he published a small book entitled *Italian Alps*. He also traveled throughout the Near East and eastern Mediterranean. In the late 1860s, he could be found in the Caucasus with several old acquaintances making a number of first ascents. Twenty years later, Freshfield made a return trip to the Caucasus. One of the fruits of those trips was the production of a map of the central Caucasus and a two-volume book, *The Exploration of the Caucasus* (1896).

In 1899, Freshfield made his now well-known trek round Kangchenjunga (28,168 ft), which will be summarized in this section, the story of which he published as *Around Kangchenjunga* (1903). He selected Sikkim as the scene of his one and only Himalayan adventure because of its varied scenery (Map 7). From what he had heard regarding the Karakoram, it sounded too monotone for his taste, just a bunch of ice and rock. In the Eastern Himalaya, he could trek from dark jungles of bamboo, palms, and ferns at low elevations to the oaks and chestnuts, and a little higher through pines, junipers, and rhododendrons; and finally, to the icy heights. It is all there in one compact vertical region. He admitted that, "I have always travelled and climbed for scenery first, for science afterwards." His objective was quite simple—to make a high-level tour around Kangchenjunga, "passing as near the great mountain as might prove to be possible."

For companions on this circumambulation of the planet's third-highest summit, Freshfield invited Edmund Garwood, a professor of geology, who also happened to be a good friend of his. Garwood also had some experience with plane-table surveying, which he put to good use during the expedition; the end result was a map of the region that was the standard for several decades. Freshfield also invited Vittorio Sella, who by that time was making a name for himself in the realm of mountain photography. Vittorio's brother, Erminio, also came along, as did a photographic assistant named Botta.

The final European was Angelo Maquignaz, an Alpine guide who lived at the base of the Matterhorn. The party of six sailed from Marseilles in mid-August of 1899.

Freshfield's plan to walk around Kangchenjunga was simple; the expedition would commence its trek from Darjeeling, proceed around the east side of Kanchenjunga, and then head westwards, entering Nepal from the north (a counterclockwise circuit). At this point in time, Nepal was off-limits to all nationalities, so Freshfield did not even attempt to get permission to enter this forbidden land. He assumed that the icy heights of this northern approach, the Jongsong La, would not be guarded by the Nepalese authorities. Henceforth the expedition would then proceed south via the Kanchenjunga Glacier and then down the valley of the Ghunsa Khola, eventually trekking eastwards looking for a passage back to Sikkim in the vicinity of the Kang La.

While in Nepal, they would attempt to avoid any settlements, and hence avoid any ensuing legal entanglements that such an encounter might inspire. However, if the expedition was intercepted by the authorities, Freshfield would claim truthfully "that our only desire was to return to British territory by the shortest route." At that point, they would fall on the mercy of the authorities, who would most likely expel the intruders as quickly as possible; and hence the expedition would head back to Sikkim, which was its ultimate goal anyway.

The key to this stratagem was that the expedition would have to go unnoticed while northwest of Kanchenjunga; if they were intercepted in this area, the authorities would most likely send them back the way they came, ending the hopes of the circumambulation. The Sikkim side of Kangchenjunga had been partially explored by Hooker and a little later by a John White—a Political Officer stationed in Sikkim—and a few others like Major Waddel, who had also been stationed there. Consequently, there was some useful route information adrift in Darjeeling as the expedition readied itself.

The name Kangchenjunga (the 'j' should be pronounced as a 'z') literally translates to 'snow big treasury five,' or 'Five Treasuries of the Great Snow.' This comes from a written Tibetan source, which states that the five treasuries are: 1. Salt. 2. Gold and turquoise. 3. Holy books and wealth. 4. Military weapons. 5. Crops and medicines. A number of Nepalese disputed this name back in the early parts of the 20th century; they claimed it should be 'Kumbhkaran Langur.' Others said its true Tibetan name was 'Kang-Chen.' (see *The Himalayan Journal*, Vol.4, 1932, under 'Correspondence' for a discussion).

The monsoon was still in full force, with heavy rain falling intermittently as the expedition departed the muddy streets of Darjeeling on September 5. The Europeans were mounted on horses;

baggage was carried by the porters. The ‘road’ northeast meandered through large tea plantations and across monsoon-swollen rivers; in general, it followed the course of the Teesta River. Soon they were traveling through thick bamboo forests, which, when they had been cleared, supported fields of rice. The expedition spent several days in Gangtok, the capital of Sikkim, as guest of the Political Officer. Freshfield was certainly impressed with the beauty of the forest in this part of the country. It was while in Gangtok that a temporary but important member of the expedition was added, Captain Le Mesurier, who acted as liaison between the porters and Freshfield for the first part of the trek. But the captain also worked wonders with the logistics; Freshfield noted in his account that without Le Mesurier, the expedition would have ground to a halt just outside of Gangtok. The team was rounded out with six Gurkha police officers, who were added to the roster courtesy of the Political Officer.

Although the route northward followed the Teesta River, the actual track was “a serpentine course in and out and up and down among the basins of its eastern tributaries,” as noted by Freshfield in his account. The expedition slithered northward as the rain, which was heavy, turned the primitive track into a seemingly endless pit of mud. The leader wrote: “The whole surface of the mountain was more or less in motion; mud was slipping and sliding in streams, among which rocks rumbled and tumbled at intervals in an extremely disagreeable and somewhat hazardous manner.” On this part of the trek, their daily mileage was from 8 to 10 miles, but with considerable vertical gain and loss.

Just north of the village of Lachen, the expedition left the horses behind in order to try its luck in the east–west-oriented Zemu Valley. The prize at the end of the line was the Zemu Glacier, and ultimately access to the northeast shoulder of Kangchenjunga. The lower valley was not virgin territory—Joseph Hooker had tried to work his way up it in the 1850s, and a surveyor named Mr. Robert had also given it a go in 1883. In 1891, Political Officer White was able to make some headway; he reached the slopes above the middle section of the glacier. The main problem on the approach was the tangle of stunted rhododendron. With several local men acting as guides, the Freshfield expedition worked its way through the forest towards the glacier. On the fifth day, they left the rhododendron forest and moved into the realm of firs, which in turn gave way to tall grasses and then finally the terminus of the Zemu Glacier (~13,500 ft) came into view.

Their next campsite was some 1,500 ft above the terminus of the ice on the south side of the valley. On the following morning, under blue skies, expedition members were rewarded with their first close-up views of the Kangchenjunga Massif. The main summit was hidden by some intervening ridges, but the peaks to the north were clearly visible. They proceeded several miles up the moraines on the

southern side before striking out across the ice itself. The expedition crossed without incident, although this was the first experience of trekking on ice for most of the porters.

Basecamp was established in the northern ablation valley; thereafter, Sella, Garwood, Maquignaz, Freshfield, and a dozen porters continued to work their way westwards towards the head of the Zemu Glacier. Along the northern slopes above basecamp, they found an abundance of wildflowers; edelweiss and gentians predominated. The advance party soon came upon a lake (Green Lake, ~16,600 ft) tucked against the rock walls to the north and west. Freshfield and Maquignaz, the Alpine guide, took a day hike crossing the broken ice of the Nepal Gap Glacier, which flows into the central Zemu at this juncture. Freshfield was attempting to get the lie of the land while the weather remained clear. Located a handful of miles to the west, the main summit of Kangchenjunga loomed some 13,000 ft above the climbers. The twosome was able to follow an ablation valley and made good time to the confluence of the Twins Glacier with the Zemu Glacier. From this vantage point, Freshfield noted the 'gap' at the head of the Zemu Glacier (Zemu Gap, 19,196 ft), which was about 3 miles to the south, looking quite easy to ascend. However, the south side was *terra incognita* and it was anyone's guess what the descent from the pass would entail. Although Freshfield was tempted to try his luck on Zemu Gap, he was well off course for the trek around Kangchenjunga.

As the weather rapidly deteriorated that afternoon, the two climbers made a hasty retreat back down the valley to their high camp. It snowed heavily overnight and continued to snow for the next two days; total accumulation was over 3 ft. The weather gods had spoken; it was time to move to lower elevations. On the trek back down the valley, they had a brief glimpse of the surrounding terrain during a momentary parting of the clouds: "… spotless spires of snow, incredible pinnacles or battlements of ice, gleamed from time-to-time against shifting spaces of blue sky." Later, they found out that the storm was widespread across Sikkim and northern Bengal. Weather observers had measured 27 in. of rain over a thirty-eight-hour period at Darjeeling; flooding and mudslides created havoc, with considerable loss of lives and property.

The large accumulation of new snow, and the fact that the snowline had now descended from roughly 18,000–14,000 ft, forced some changes in the expedition's itinerary. In addition, it was now the third week of September. The good news was that the monsoon rain/snow would soon be over; the bad news was that air temperatures would start to decrease as October progressed. Instead of attempting one of the passes situated on the ridge that extended north of Kangchenjunga, which were untried and

which laden porters would have to be able to navigate, Freshfield decided to stick with his original route via the known 'path' to the Lhonak Valley and enter Nepal via the Jongsang La.

After the expedition was reunited at basecamp, the team trekked to the Theu La (17,100 ft), and once down on the north side of the pass, they followed the Langbo and then Goma rivers to the base of the Lhonak Glacier. En route to the glacier, they passed through a series of valleys, which Freshfield referred to as the 'Lhonak Valley.' His description is vivid: "The lines of the landscape are those of an ice-modelled and ice-protected region. It is a land of moraines, the monuments of departed or diminished glaciers. There are no trees, no rhododendrons, no shrubs except a few stunted junipers; no real turf, only sparse grasses good enough for yaks, but that would not at all fulfil the requirements of a Swiss cow."

While in the upper Goma Chu (Goma River Valley), several members of the expedition, which included the leader, decided to have a close look at Chorten Nyima La (19,091 ft), the primary pass into Tibet from this part of Sikkim. Because of a navigation error, they took the wrong valley north and ended up on the ridge with a splendid view of the surrounding peaks, but well east of the intended pass. They gave up on the idea of reaching the pass and headed back to camp.

The upper Lhonak Valley was still blanketed in deep snow, so on subsequent afternoons, as temperatures increased, Freshfield recounted how they often "were reduced again to the hard labor of snow-wadding." The members of this expedition were not the first Westerners to set foot in the environs. A Lieutenant O'Connor had been through here in 1896, as had the seemingly ever-present Mr. White. Freshfield speculated that the pundit Chandra Das had also passed through this valley in 1879, on his way into southern Tibet.

The next day, the expedition stumbled amidst a snow-covered boulder field near the terminus of North Jongsang Glacier; they still had nearly 3,000 ft to gain before they could traverse the pass. In the morning, there was yet more monotonous plodding through deep snow. Freshfield referred to the landscape as a "white desert," but at least the sky was clear of clouds and the distant peaks were slowly coming into focus. The members of the expedition at this juncture were strung-out over a considerable distance, as each man dealt with the altitude and soft snow as he saw fit. The final ascent to the pass was no better than the lower slopes; the recent heavy snowfall across the region had made a relatively easy ascent under normal conditions, into an exacerbating experience that was best soon forgotten.

When they finally reached the Jongsang La (20,223 ft), their guide, Rinsing, a Sikkim surveyor who had been on the pass once before, declared without any preamble that they were on the wrong pass. The European members of the expedition were perplexed, but a quick survey indicated that this was indeed the correct pass. Freshfield speculated that this might have been an attempt by Rinsing to keep the expedition out of Nepal, where, as the reader may recall, it had no permission. In any case, order was restored, and the men plunged step down into Nepal.

The view of the northwestern slopes of Kanchenjunga was “a picture of absorbing interest” to the Europeans. Most of the Western slopes of the mountain were blanketed under a thick mantle of snow and ice; exposed rock was a rare commodity. Freshfield noted that future climbers would have to contend with plenty of avalanches if they attempted the summit from that side. However, from what he had seen so far, which was at that juncture only a distant view, he thought the mountain was climbable via the Kangchenjunga Glacier.

The descent from the pass was no free ride; after they left the glacier, they ventured onto an unstable field of snow-covered boulders; this was followed by another session on a glacier (Freshfield did not name these glaciers. On Frank Smythe’s maps it is referred to as the ‘Jongsang Glacier,’ but has been renamed the ‘Ginsang Glacier.’ It is also possible that they moved across the lower extent of the West Langpo Glacier). Freshfield likens the surface of this uneven body of ice to “… an angry sea. The frozen waves rose from fifty to a hundred feet high.” The next day was a repeat of the previous one; more obstacles to navigate around and over; there were many streams on the surface of the glaciers that had to be wadded through or jumped over, when possible. The pace had been reduced to a crawl as heavily burdened porters were stretched out far behind the Europeans—not a wise move on the part of the expedition leader, as we will soon learn. The desperate state of the Jongsang and associated bodies of ice was reiterated in 1930 by Smythe, who ascended the glacier. He reported massive boulders, 100-ft-high ice pinnacles, and that much of the route was extremely hummocky. Current satellite imagery shows three-quarters of the glacier is smothered in supraglacial moraine.

That evening, the vanguard of the expedition reached the confluence of the Ginsang Glacier with the Kangchenjunga Glacier; towering lateral moraines offered a chance to escape the ice. The expedition gladly camped on dirt to an area called in Freshfield’s day as it is today: ‘Pangperma’ (~17,300 ft). It had taken six arduous days of glacier and snow travel to reach this spot from the Lhonak Valley.

Now with an unobstructed view of the northwest face of Kangchenjunga, Freshfield noted the steepness of the “icy banks and short cliffs,” with plenty of crevasses riddling the icy banks. He also suggested that climbers would be best served by sticking to the slopes under the North Col; overall, this route, he noted, is raked by avalanches and rockfall. “The whole face of the mountain might be imagined to have been constructed by the Demon of Kangchenjunga for the express of defense against human assault …” He warned that this route could not be recommended until climbers were able to piece together a ‘safe’ passage through the objective hazards. This closer inspection of the mountain was in sharp contrast to his earlier comments made from Jongsang La.

The next day, the expedition walked down towards the summer encampments of Lhonak and Kangbachen amid a carpet of flowers and soft turf. They came across an uninhabited village (not mentioned by name, but probably Kangbachen) with its complement of prayer flags and stone huts. They set up their tents in the village and the next morning, after the low clouds had dissipated, they were treated to a view of Jannu (Kumbhakarna, 25,294 ft; the first ascent was in 1962 by the French via the South Ridge) and surrounding terrain, which Freshfield noted as being “sensational.” After a short trek the following morning, at an elevation of 13,000 ft, they entered a mixed forest of conifers and deciduous trees. After weeks of travel on snow, the sight of greenery was a delight to the Europeans.

The expedition met their first Nepalese in the village of Ghunsa. The local inhabitants greeted the expedition with baskets heaped with vegetables, potatoes, eggs, and milk. It seems that some men who had been up-valley had sent word down to the village that a group from Tibet were headed their way. The very positive reception was a shock to Freshfield and the rest of the expedition, but a welcome shock nevertheless. It seems that Sir Joseph Hooker had wandered through this village some fifty years earlier. It would appear that although Freshfield did not mention it specifically, the expedition did not attempt to detour around this village. It is possible that he concluded that they were far enough into Nepal that if detected and forced to leave they would be allowed to continue to the south and east, completing the circumambulation.

It was in Ghunsa that they encountered a Nepalese customs inspector who for some reason wanted to hinder the good relations between the villagers and the expedition on matters of resupply. In addition, he wanted the expedition to surrender its firearms to him. Freshfield reversed the situation (recall that he was a lawyer, so trained in the craft of oral argument) by skillfully telling the official that he would report him to his own superiors in Katmandu if he continued to hinder them from returning to British-held Sikkim. Freshfield told the official that they had been forced out of the mountains to the

north because of the heavy snowfall, and they would leave Nepal shortly (at least the second part was true). The official seems to have either followed the logic or took the threat about a complaint being filed in Katmandu regarding his actions seriously; in any case, he made no more fuss and soon departed the field of action.

The expedition's camp at Ghunsa also gave the porters a chance to recuperate from the trials of the past several weeks. All had been accounted for except one; he turned out to be the owner of a small Sikkimese farm. The account that Freshfield was told by one or more of the porters was as follows: high up amidst the rocks on the south side of the Jongsang Pass, this particular porter told his fellow porters that he wished to die. He verbally stated his last will and testament. His colleagues gave him some water and a few biscuits, then left him to nature. By the time Freshfield heard about it, it was too late to send out a search party. The porter never did rejoin the expedition and when it had returned to Darjeeling, Freshfield was asked to pay 'damages' for the loss of this particular man.

With the help of a young local man as guide, the expedition departed Ghunsa and headed southeast and up towards the Yalung Valley. En route, they had to traverse three passes (Sele, 15,125 ft; Mirgin, 15,190 ft; and Sinelapch, 15,299 ft), which Freshfield referred to collectively as 'the Chunjerma.' In any case, the weather was superb for photographs, Jannu being the main attraction. They did not venture up to the terminus of the Yalung Glacier, a decision that Freshfield later regretted. The expedition instead pushed eastwards and entered the lower valley of the Yamgachha Khola that leads to the Kang La, the pass that lies on the northern section of the Singalila Ridge, which divides Sikkim and Nepal. The ascent up to the Kang La (16,680 ft) was uneventful, but the cloud cover inhibited any views of the surrounding majesty.

On the Sikkim side of the pass, the expedition was met by a 'relief' party sent by the Deputy Commissioner in Darjeeling, a spot that Freshfield called 'Jongri.' With the recent flooding, the Deputy Commissioner had been concerned with the safety of the expedition and hence had sent out a party in the direction of Kang La. As it turned out, a number of men in Freshfield's expedition were sick, so some extra hands turned out to be a blessing.

A number of tracks in the mountains had been washed out by the recent floods but alternative routes had been established. There was nothing at Jongri (Dzongri) but a few shepherds' huts and a herd of yaks; however, the tranquility and grassy pastures inspired Freshfield to speculate that in the near future it would become a first-rate tourist attraction. He went on to say: "I see no reason why it should

not also serve as a health resort for Anglo-Indians in want of drier and rarer air than that of the City set on a Hill (Darjeeling)." The clouds departed, so they were afforded first-rate views of the region. The area to date has not been developed into any serious resort; however, the Himalayan Mountaineering Institute does have a basecamp near there from which they conduct various climbing courses.

After several days at Jongri, Freshfield and a contingent of healthy men trekked northward towards the Goecha La (16,215 ft). Some of the invalids remained at Jongri for additional recuperation, while the walking wounded—with the aid of those from Darjeeling—started down to the fleshpots of civilization.

Freshfield's team ventured northward in the upper Praig Chu (Prek Chu) Valley, trekking through several lush meadows and past Buddhists' monuments. The view of the surrounding mountains from Goecha La, as described by Freshfield, is good but lacks "somewhat in scenic effect." It would have been helpful if he had explained what he meant by this remark; in any case, he seemed to be a little disappointed in the view. However, the next day he said that they ascended and then contoured the flanks of Panmah (21,951 ft) where, according to Freshfield, the view improved greatly. The party trekked back to Jongri and then proceeded up the valley towards the base of the East Ratong Glacier. They ascended the slopes that extend south from Forked Peak and were rewarded with an expansive view of Kangchenjunga's southern face, including the cirque of the upper Yalung Glacier. This was the last of their Alpine forays; it was time to return to civilization.

The trek to Darjeeling took the remaining members of the expedition back down into the rhododendrons and fir forest, eventually through the dark groves of oaks, chestnuts, and bamboo. After an exceptionally long day of trekking, they arrived at the town of Yoksun just as the sun was setting. Early the next morning, they had the obligatory public appearance at the local monastery, which in this case happened to be 1,000 ft above the town, which on tired legs was not an enjoyable walk. As the expedition continued to make its way towards Darjeeling, various settlements on their route greeted them as conquering heroes. An assortment of snacks and drinks were 'forced' on the members of the party by local dignitaries, most often at temples and monasteries. The last couple of days, the expedition was given ponies to ride, an opportunity most members did not decline.

The trek around 'the treasures of the five snows' had taken some seven weeks, with approximately 75,000 ft of elevation gain/loss. Another interesting fact pointed out by Freshfield is that they also had a stretch of twenty-three days where they did not see a tree. It was only when they were

back in Darjeeling that it was confirmed that one of the porters, as noted earlier, had decided to call it quits on the south side of the Jongsang La. Fortunately, this was the only loss of life. As leader of the expedition, Freshfield should have been more attentive to the slow ascent and strung-out nature of the personnel under his leadership on the ascent and descent of Jongsong La. This was a definite failure on his part; he was leading from the front with what appeared to be little concern for the rear.

Recall prior to the expedition leaving Darjeeling that Freshfield had speculated that they would be able to travel through Nepal despite not having permission due to the remoteness of the area; this, as it turns out, he was justified in his assumptions.

Besides connecting the dots between the travels of those who had gone before, but never around the mountain, this expedition added to the geologic knowledge of the region thanks to Professor Garwood. He also spent much of the expedition surveying. Prior to this date, there was a crude map of the region; through Garwood's efforts, based not only on the plane-table surveying, but using photographs as well, he was able to produce a much more accurate map. For example, he was able to add or correct the positions of some sixty glaciers that had been missing or misinterpreted on the older Survey of India map. Many of the spurs and ridges emanating on the east side of Kangchenjunga were now shown correctly. The topographic details he was able to provide on the Nepal side of the mountain was all new material.

After completing the circumambulation of the mountain, Freshfield commented on the prospects of an ascent. He ruled out any routes from the Darjeeling side (east) as being just too steep and complicated. The route he felt held the most prospects was the northern ridge, which could be accessed via the east or west. He also speculated on the possibilities of an inner circuit around the mountain—that is, a route that would utilize some of the more difficult passes on the eastern and northern flanks of Kangchenjunga. He thought it would be possible by a group of mountaineers but not with porters. As it turned out, the first ascent of Kangchenjunga was made in 1955 by a British expedition, which climbed via the Southwest Face from the Yalung Glacier.

In 1905, Freshfield ventured into the Mountains of the Moon and made an unsuccessful attempt on Mt. Ruwenzori. In 1913, he traveled around the world. One of his great legacies was that he promoted geographical studies at the university level throughout Britain.

Freshfield died in early 1934. In an obituary written by Thomas Longstaff, he referred to Freshfield as "a cultivated Victorian." Today, we would think of him as a Renaissance man—he knew

Greek and wrote poetry. Longstaff also said that he could hold a conversation on almost any subject because “his knowledge of literature was encyclopedic.” Although he never practiced law or needed to work at a traditional job, Douglas spent his time serving on various committees and at one time or another he had been the President of both the Geographical Society and Alpine Club, amongst others.

[For a very good review article of Freshfield’s travels in and around the Kangchenjunga Massif, see “Towards Kangchenjunga” by D. Side; *The Alpine Journal*, Vol.60, No.290, 1955, pp.83–95]

Chapter 8

Eckenstein and His Eclectic Friends

Although most pre-World War I expeditions were either a mix of surveying, science, and climbing, or pure surveying, the Oscar Eckenstein expedition of 1902 that trekked up the Baltoro Glacier was focused on climbing K2. Although one of the members did engage in some surveying, this expedition can be considered, along with Graham's attempt on Kabru in 1883, one of the earliest pure mountaineering endeavors in the Karakoram-Himalaya.

Eckenstein invited fellow Brit Aleister Crowley along, making him deputy leader. Crowley was a Scottish Lord (the Lord of Boleskine), who was a lifelong spiritualist, poet, and all-round eccentric—probably one of the strangest and most egotistical characters to set foot in the Karakoram-Himalaya. He did not have a strong climbing résumé to be included on a first attempt at K2; nevertheless, he was a friend of Eckenstein despite the seventeen-year age differential, Eckenstein being the eldest. Two years before this expedition, Eckenstein and Crowley had spent a number of weeks together climbing the volcanoes of central Mexico. It was during this trip that Eckenstein had conceived of the attempt on K2.

As it turned out, the expedition was an international affair; additional members included Dr. Jules Jacot-Guillarmod, a Swiss doctor who went along as the team physician. He had a more robust climbing résumé than Crowley; an added bonus was that he had dabbled with surveying from time to time. Jacot-Guillarmod ended up writing a book about the expedition called *Six Mois dans l'Himalaya* (1904). Unfortunately, it has never been translated into English; and since Eckenstein never wrote anything about the expedition, the details are a bit lacking. The source I used for this summary is taken from a book by John Symonds entitled *The Great Beast: The Life and Magic of Aleister Crowley*.

Additional expedition members included a twenty-two-year-old Cambridge University student by the name of Guy Knowles. We know little about his background except that it appears that he funded most of the cost of the expedition. Two Austrian climbers with strong mountaineering backgrounds also signed on: Heinrich Pfannl and Victor Wessely, both aged thirty-one. Before the expedition got under way, each of the European members had to sign a contract specifying that Eckenstein was the leader and Crowley his deputy. Decisions were not going to be made by the group; it was Eckenstein or else.

This cast of characters rendezvoused in Rawalpindi in the late spring of 1902, and set out for Srinagar on foot and in horse-drawn cart. A few days out of Rawalpindi and like a bolt of lightning out of

the blue, Eckenstein was 'summoned' by the authorities to return to the city. It turns out by no less authority than the Viceroy of India, Lord Curzon. Eckenstein was forced to remain in Rawalpindi for several weeks and was then released; the expedition leader was able to join his teammates in Srinagar. Oscar never revealed why he had been detained; there was a rumor that it was because of his German heritage—that he might be a Prussian spy (his father was German and his mother was English). In any case, the mystery of his arrest appears to be buried in the annals of British India.

On April 28, the expedition marched out of Srinagar with 170 porters and a copy of Conway's 1892 map; after the expedition had concluded, Eckenstein said that the team had found Conway's map "difficult to reconcile with nature." Enroute to K2, Dr. Jacot-Guillarmod set up clinics in villages and treated the sick as best he could; minor surgery was not uncommon. This practice set the norm for many future expeditions throughout the Karakoram-Himalaya; whether they had a qualified doctor or not, they were expected to provide various degrees of medical attention. When they departed Askole, the last village before the Baltoro Glacier, the expedition had swollen to 230 porters, eighteen sheep, fifteen goats, and twenty chickens. Crowley was transporting a venerable library—mostly it consisted of books of poetry. This did not sit well with his leader; the two headstrong Brits argued over it on more than one occasion. Crowley threatened to leave the expedition if his library was not hauled up the Baltoro Glacier; Eckenstein finally acquiesced.

By mid-June, the expedition had established their basecamp on the Godwin-Austen Glacier just south of K2 (~16,200 ft). In all likelihood, they were the first humans to see the great mountain this close. We know that some shepherds traveled deep into the mountains, and merchants of course traveled through and over the mountains, but K2 and the upper Baltoro were dead ends as far as the locals were concerned; in addition, it is far too high and too far from Askole for any shepherd to lead his animals in search of grazing. It is possible that some locals had wandered up there out of curiosity, but there is no definitive answer.

From basecamp, Crowley spent many hours peering at the mountain through binoculars. He declared that the Southeast Ridge provided the only practical climbing route. Of course, he had not seen any of the other sides of the mountain, but then—he being a mystic—he had spiritual insight that no one else had. The climb commenced a few days later on the Southeast Ridge. They did manage to establish a camp on an exposed part of the lower ridge, but over the next week, the weather was not conducive for climbing—lots of fresh snow interspersed with short periods of sunshine.

Details are lacking, but evidently Crowley, Pfannl, and Dr. Jacot-Guillarmod were designated as the first summit team. It is not clear why they were forming summit teams when they still had 10,000 ft of difficult ground to ascend, but such was the hierarchical structure of the expedition. Not long thereafter, an extended period of high winds developed and the climbers were confined to the lower reaches of the mountain. Crowley, who by then saw himself as the climbing leader—despite his very humble climbing résumé—had developed a case of snow blindness.

Meanwhile, Pfannl and Wessely had reconnoitered the east side of the mountain and determined that the Northeast Ridge was climbable. As a result, basecamp was eventually moved to the east side of the mountain; Crowley was not happy about the move but was overruled by Eckenstein. The weather was still not favorable for a serious attempt high on the mountain; nevertheless, by July 10, Wessely and Dr. Jacot-Guillarmod had reached an altitude around 22,000 ft, but this was as high as they could manage.

Just after their return to basecamp, one of the strangest incidences in the annals of mountaineering occurred, and of course it involved Crowley. The spiritualist was experiencing an attack of malaria. For some reason, Crowley pointed a revolver at Knowles; the latter did not appreciate this provocative gesture and promptly "jumped at Crowley." The revolver went flying and Crowley hit the ground from the hard blow. We do not know what happened next, but cooler heads seemed to have prevailed and a more normal basecamp routine resumed.

Near-continuous snowstorms during July and early August limited any further attempts on the mountain. In a letter back to a friend in England, Eckenstein complained that as of July 27, there was some 5 ft of fresh snow on the ground outside of his tent. The Austrian duo managed to reconnoiter a little farther up the Godwin-Austen Glacier, but the expedition was effectively over. Although Eckenstein went on to climb extensively in the Alps, this was his last foray into the Karakoram or Himalaya.

Crowley and Dr. Jacot-Guillarmod would team up, temporarily as it turns out, in 1904 for an attempt on Kangchenjunga. Let me summarize the Kangchenjunga expedition at this juncture so we can be finished with the Crowley circus and move on to serious exploration. This expedition is probably the most controversial in history. The attempt was made from the Yalung Glacier on the south, well within Nepal. It was Crowley's expedition and he made sure no one forgot that fact. In the early stages of this venture, tension developed between Dr. Guillarmod and Crowley over several issues; the latter treated the porters extremely poorly and did not equip them properly for the high-altitude conditions they were

going to contend with. In addition, Crowley always climbed out in front, typically solo, and did not communicate his thoughts or plans to the rest of the expedition members.

One of the porters was killed in a fall early into the climb; it hardly phased Crowley. Later on, a single rope team of six porters lost their footing and slid down the mountain, starting an avalanche in the process; this slide engulfed several of the European climbers as well. A number of men were killed when they were swept into a large crevasse. Crowley had been climbing well above the incident but did not bother to respond to pleas for assistance from the survivors below. Crowley descended the next day but callously deserted the expedition, making his way back to Darjeeling.

Crowley wrote his own account of the expedition, as did Dr. Jacot-Guillarmod; the accounts were—not unexpectedly—at odds with each other. Dr. Jacot-Guillarmod, who had financed most of the expedition, considered suing Crowley for embezzlement, but never followed through with the lawsuit. Thus ended one of the most mournful expeditions of all time. We can also close the chapter on Crowley with regard to the Karakoram-Himalaya; fortunately for everyone, he never returned.

Chapter 9

Dr. Thomas Longstaff

One of the pre-eminent names in the early exploration of Karakoram-Himalaya was Thomas Longstaff. He was a prolific English rock climber from his earliest days. In his autobiography, entitled *My Voyage* (1950), he recalled that by the age of twelve he was performing traverses on the seaside cliffs at Devon. Like so many other Brits, his climbing career benefited from the fact that he came from an upper-class family—this meant he could spend school holidays in the Alps. In fact, by his late teens he was a seasonal visitor to the Alps and by his early twenties he had climbed many of the well-known routes in that range. It was while climbing in the Alps that he met a number of influential climbers and guides, the latter including the Swiss guides Matthias Zurbriggen and Alexis Brocherel.

At the advice of his father, young Longstaff trained as a medical doctor, eventually receiving his M.D. However, he never established a full-time practice in England. The call of the outdoors was too strong for him to be stuck indoors with a stethoscope draped around his neck. He ended up traveling and exploring in the wilds of Alaska, Canada, Greenland, Spitzbergen, and the Caucasus. His first trip to the Karakoram-Himalaya was in 1905, where he roamed across the Garhwal and into southern Tibet (more on this below). He returned to the Garhwal in 1907, with the intent of climbing a big mountain and conducting survey work. By 1909, he was in the Eastern Karakoram for a whirlwind tour of the Siachen Glacier. His next appearance in the Karakoram-Himalaya was as a member of the 1922 Everest expedition led by his friend, Brigadier-General Charles Granville Bruce. Although I noted above that he never formally practiced medicine, he did however treat many fellow expedition members and hundreds of villagers while in the field. Besides having an interest in surveying, he was respected as a naturalist and ornithologist. He was also a veteran of both world wars.

Since this is going to be our first detailed look at the Garhwal, it is worth digressing from the Longstaff expedition to summarize previous explorers into the region and the lie of the land. (Map 8)

Uttarakhand (‘North Land’) is the modern political state, which was carved out of the state of Uttar Pradesh in 2000. It is composed of two divisions: Garhwal and Kumaon; each division has a handful of smaller districts. In some older books, they refer to the region as ‘the United Provinces,’ which in reality corresponds to Uttarakhand and part of northern Uttar Pradesh. Kumaon is bordered on the east by Nepal, and by Tibet on the north; Garhwal lies to the west of Kumaon and is bordered on the north by Tibet, and on its west by the state of Himachal Pradesh. The line between Kumaon and Garhwal runs

from the Tibetan border south, just to the east of Nanda Devi, and then veers to the southwest. The majority of high peaks in the region lie in the Garhwal.

The monarchs of the region are of course Nanda Devi (25,643 ft) and Kamet (25,446 ft), but there are a host of other noteworthy peaks such as Trisul (23,360 ft), Dunagiri (23,182 ft), Nilkantha (21,300 ft), Changabang (22,520 ft), and Shivling (21,467 ft). In addition to the peaks, there are some important rivers, including the Alaknanda (one of the sources of the Ganges River), as well as the Rishi Ganga (drains Nanda Devi Sanctuary), Gangotri, and Kali rivers. This is also the home of the Valley of Flowers made famous by F. Smythe in the 1930s, which will be highlighted in later chapters. The most important settlement at that time was Joshimath, which lay astride the pilgrim path. This path or wide trail was used by many thousands of Hindu pilgrims each summer to reach Badrinath, some 25 miles farther north and home to one of four temples. The point of departure for most of the early expeditions was the hill station of Almora or nearby villages. They would trek northward to the Kuari Pass, which was a three-day walk southeast of Joshimath.

The first documented Westerner into the region was George Traill, who was the District Commissioner from 1817–35. Traill ventured to the area southeast of Nanda Devi in hope of finding a short-cut to the important village of Milam located on the Gori (white) River. He crossed a high pass near Nanda Kot at the head of the Pindari Glacier, which has become known as 'Traill Pass' (17,248 ft). It is not the highest pass in the region but it is not the easiest either. It was not until 1855 that Adolph Schlagintweit made the second crossing of the pass.

It was another British governmental employee, Edmund Smyth (Education Department), that ventured over Traill Pass and beyond in 1861. He was an avid hunter, which took him far and wide; he traversed both the Bhyundar and Ralam passes and found his way into southern Tibet at the base of Gurla Mandhata. In 1883, William Graham—accompanied by Boss and Kaufman—roamed the valleys and hills to the west of Nanda Devi. They made an attempt on Dunagiri which failed, but it was followed by the ascent of a smaller peak nearby. This small party also attempted to work its way up the Rishi Ganga to the base of Nanda Devi, but of course failed at that, too; it would only yield in 1934 to the determined pair of Shipton and Tilman, and their cast of Sherpas. Therefore, although the main valleys of the Garhwal had been trodden by the boots of a number of European explorers and hunters, there was plenty of untrodden ground, and many virgin peaks had never seen footprints even on their lower flanks.

Before diving into the details of Longstaff's 1907 expedition, let me give a brief outline of his travels during his 1905 campaign, as it laid the groundwork for his 1907 itinerary. As noted above, Longstaff made his way to the Garhwal in 1905, with the intention of climbing Trisul and possibly some peaks around Kamet. However, his plans were waylaid when he arrived at the district capital of Almora in the early summer. The District Deputy Commissioner, Charles Sherring, invited Longstaff to accompany him on a tour up the Milam Valley (Kumaon) and into Tibet, and the offer was too good for Longstaff to resist.

Longstaff and the two Brocherel brothers, Alexis and Henri—who were guides from Courmayeur at the base of Mt. Blanc—had three weeks to spare before meeting the Deptuty Commissioner at the village of Milam. The threesome spent the time exploring many of the valleys which extend down from Nanda Kot (22,510 ft), and the eastern barrier of the Nanda Devi Sanctuary. They ventured up the Panchu Glacier and from the ridge above were the first Europeans (possibly first persons) to look down onto the glaciers of one of the holiest sights of Hindu mythology, the Nanda Devi Sanctuary. They made a brief excursion on the lower eastern ridge of Nanda Devi East (24,389 ft) but they were hamstrung by a lack of supplies (it was climbed in 1939 by a Polish team). Since they were already so close to Nanda Kot, they gave the northeast ridge a serious attempt. They managed to reach 21,000 ft-plus on the ridge but turned around with the summit in sight because of the dangerous snow conditions (first ascent was by a Japanese party in 1936). They were quickly learning that attempting a large peak using Alpine methods was a big gamble; once in a while it paid off but most of the time Himalayan peaks would only yield to a more sustained effort.

After meeting up with Deputy Commissioner Sherring, the party slowly made its way up the Kali River Valley. They crossed into Tibet via the Lipu Lekh (16,780 ft). While Sherring took care of political business, Longstaff and the Brocherel's set out for Gurla Mandhata (25,242 ft), which was nearby. They gained access to the mountain from the west. Their first climbing foray turned out to be on a ridge which jutted out from a satellite peak; after reaching 20,000 ft, they realized their mistake—they would not be able to continue to the summit on this route. There was nothing to do but descend and concentrate their effort on the true west ridge.

After redirecting their effort on the West Ridge, they set up a camp at 19,000 ft, and the next day—without their camping gear—were able to reach 23,000 ft. They were still a long way from the summit, so were forced to find a place to bivouac for the night. They decided to downclimb the south side of the ridge in order to reach an outcrop of rocks that looked like it would provide modest shelter.

En route, while roped up, the trio started a wet-snow avalanche which carried them some 3,000 ft down the mountain.

They were lucky; after the long ride down the slope, each man only suffered minor injuries. All three lost their ice axes and broke a crampon; in addition, the rope had been cut by Longstaff so he could extricate himself from the tangle. The Brocherel's shrugged off the accident and spent the next three hours hunting for their ice axes; they managed to retrieve all three. Saner men would have descended, but the next day they forged ahead on a different route, this time trying their luck on the Gurla Glacier. They spent the next night in a snow cave posed on the edge of a crevasse. This was their second night without sleeping bags, so they attempted to keep their feet from freezing by putting their legs in their rucksacks.

The next day, they worked their way to the upper Gurla Glacier, but they were finally overtaken by the cold and fatigue; Longstaff could only estimate their highest elevation, probably in the 23,000–23,500 ft range (first ascent was May 1985 by a joint-Japanese-Chinese expedition). The next several days were epic: when they arrived back down on the plateau, there was no sign of Sherring or the basecamp he had supposedly established. The three climbers wandered north and then south without gear or food. Some Tibetans gave them a few tidbits to swallow but by this time their energy was depleted. Fortunately, Sherring had become concerned and hence sent some of his servants to look for the overdue climbers. The servants found the climbers due west of the mountain completely shattered.

They spent a short, recuperative period camping on the shores of Lake Manasarovar (14,950 ft). This body of water is holy to Hindus and Buddhists, and has therefore been a place of pilgrimage for countless centuries. In Tibetan, Manasarovar means; 'unconquered' or 'invincible.' Much of its freshwater is derived from the glaciers which flank Mt. Kailash (21,778 ft). Although Longstaff was sick with influenza, he was determined to take a different route back to Garhwal. The party took three weeks to make the trek, but by late August they crossed back into India via Shalshal Pass (16,390 ft), located due north of Dungairi. Longstaff and his two French guides made their way south through the Garhwal countryside.

Their next objective was to explore the area on the south side of Trisul; they found that this side of the mountain was very steep; there was no easy or even moderate route. Longstaff determined that if the mountain was going to be attempted, it would have to be from the north. Hence it would have to wait for another season, as this campaign had come to a conclusion.

The 1907 Expedition

Longstaff's 1907 expedition to the Garhwal Himalaya of northern India was summarized in a May 1908 article published in *The Alpine Journal*. A book, *Five Months in the Himalaya* (1909), however, was written up by an expedition member, Arthur Mumm, a fellow Brit who for a time was the Honorary Secretary of the Alpine Club. The concept of this expedition has to go to Charles Granville Bruce, who proposed a bold itinerary back in 1906. What Bruce had initially proposed was to climb Mt. Everest, with Longstaff and himself being the two headliners. Some planning took place but, in the end, the request was denied by the British Government of India for the party to even request permission from Lhasa. In other words, the British representative to Lhasa would not even approach the Tibetan authorities with the request. Recall that this was right after the Younghusband 'diplomatic' mission into Tibet (1904) and the resulting humiliating treaty signed by the Tibetans. Hence the British Government was not keen on any more negative publicity if anything should go awry on the Everest expedition or pushing their luck with the authorities in Lhasa.

Since the climbers had to scratch Everest off their list, there was some brief talk of an attempt on Kangchenjunga, but they deemed their chances of success were slim. They ultimately settled on a climbing foray into the Garhwal region, with a bit of survey work thrown in for good measure.

In 1906, when Longstaff and Bruce scratched Everest off their list for political reasons and Kangchenjunga for its climbing difficulties, Trisul emerged as the logical choice, since Longstaff had never gotten around to an attempt in 1905. After their attempt on Trisul, they proposed a detailed reconnaissance, if not an outright attempt on Kamet from the east. This was obviously a very ambitious program and a bit naïve on the part of climbers These were two big mountains—especially Kamet—both of which were well off the beaten track and would require a considerable amount of logistics if there was any hope of success.

Besides Bruce, Longstaff, and Mumm (more of a scholar than anything else), there were three Alpine guides: firstly, Alexis and Henri Brocherel, who of course were with Longstaff on the 1905 expedition. The newcomer was Moritz Inderbinen, a guide from Zermatt. Major Bruce was also able to secure the leave of eight Gurkhas from his own regiment who showed interest in the project. D. Sing was recruited as a surveyor; it was Longstaff and Sing who constructed the map that was produced by this expedition.

Mumm supplied a number of oxygen generators (pneumatogen cartridges), which had been developed for work in mines; he thought he would add them to the kit on a trial basis. These units are predecessors to 'rebreathers,' also known as 'closed circuit oxygen units.' The user exhales into a mask, and the water and carbon dioxide are passed through a cartridge full of potassium peroxide and sodium, which chemically react to form oxygen. The advantage of this type of system is that the expedition did not have to manhandle countless heavy bottles of compressed oxygen. Another piece of their gear was a new type of backpack designed by Major Bruce; they did not have a ridged frame and were constructed from a semi-waterproof canvas.

By late April 1907, the various elements of the expedition converged on Almora Town in the hill country of the Kumaon region, where it picked up its contingency of 100 porters. The immediate plan was to trek northward to the Kuari Pass and then eastwards up the Rishi Ganga Valley (often referred to as the Rishi Gorge) to the northwestern slopes of Trisul. The trail led up and down through the foothills, through thick stands of bamboo in valley bottoms and forests of deodar pines on the ridge crests. The intermediate hillslopes were often covered in stands of oak, chestnut, or rhododendron; despite the natural beauty, the expedition was plagued by small black flies.

Some eight days after leaving Almora, the expedition traversed Kuari Pass (12,516 ft) on a cloudless morning. The view was sweeping, from Kedarnath and the Badrinath ranges in the west, Kamet to the north, and Nanda Devi and Trisul to the east. They descended into the Dhauli Valley and then over the course of the next several days proceeded due east towards the confluence of the Rishi Ganga with the Dhauli River.

In order to avoid the difficulties of the lower Rishi Ganga Gorge, the expedition followed the path pioneered by Graham in 1883; they headed north along the Dhauli to the village of Lata. From Lata, they would strike east-northeast up the slopes to the ridge and then once across the ridge, head southeast, eventually dropping back down to the middle section of the Rishi Ganga River (referred to as the 'back door' route). Here they hoped to cross over the river and trek due south for Trisul.

The ascent from Lata village was difficult; it was considerably steeper and more slippery than anyone had anticipated. The porters grumbled about the difficulty of their task but nevertheless the expedition slowly trudged upwards. That evening, they camped near 13,000 ft at the base of Lata Peak, itself located on the western flanks of Dunagiri. The next morning, a small reconnaissance party set out to check on the conditions in Durashi Pass (14,700 ft), a short distance ahead. This was the divide

between the Dhauli and Rishi Ganga basins and would allow access to the middle Rishi Ganga. The reconnaissance party returned early to report that there was too much snow for the porters to manage. The snow was late in melting that year (in mid-May) as the weather over the last month had been cloudy and cold with occasional snow showers. After a council of minds, it was decided to put the attempt on Trisul on hold and to spend the waiting period in the Dhauli Valley and its numerous tributary valleys.

The expedition ended up exploring the Dunagiri Valley, located due north of the peak of the same name. The 8-mile-long Bagini Glacier resides in the upper half of the valley. The team divided its manpower at this juncture; Longstaff, Bruce, the Brocherel brothers, and four Gurkhas were to explore the upper Bagini Glacier with the aim of crossing over into the northern sector of the Nanda Devi Sanctuary and then attempt to exit via the upper Rishi Ganga. If the exit proved intractable, the party would have to retrace their steps. The remaining expedition members would retrace their route down the Bagini Glacier and make their way back to the Dhuali Valley.

The climbing party set out on May 20 under cold but otherwise ideal conditions. They soon obtained an unobstructed view of Changabang's 5,000 ft pale granite Northwest Face (22,520 ft, first ascent by a British expedition in 1974). They reached Bagini Pass (20,100 ft) the next morning and found that the descent down the southern side was significantly more difficult than the ascent had been. They had to repel over a considerable amount of rock to reach the snow-ice below. The pass is sandwiched between Dunagiri on the west and Changabang on the east. It was soon apparent that the map they were using (Survey of India) was quite incorrect with its depiction of the lie of the land. They were well west of the Nanda Devi Sanctuary, with an imposing mountain barrier intervening. They trekked down a glacier which was not on their map but was called 'Rhamani' by one of the local village headmen. Due to the high continuous ridge to their east ('the barrier'), penetrating the Nanda Devi Sanctuary was now out of the question.

They made quick work of the trek down Rhanmani Glacier, camping that night off the ice in a small patch of birch trees. In order to close the loop and reach the Dhauli Valley, they now had to traverse along the southern and then western slopes of Mt. Niti and Tolma Peak, which took several days. Ultimately, they reached the valley and were on May 29 reunited with Mumm and team. After an arduous excursion the party was tired, but to quote Mumm was "flushed with success." Two days later, minus Major Bruce—who was nursing a swollen knee—the expedition began the return trek up to

Durashi Pass: it was time to come to terms with Trisul. Bruce would join the main party when his knee had recovered sufficiently.

From the Durashi Pass, it was a slow, steep descent to the Rishi Ganga, just below the pass as they came to some steep, snow-covered slopes that had to be carefully traversed. Within the valley, the river and its load of glacier flour was crossed via a jumble of large boulders. Several days later, the expedition was able to move up the western (right-hand) margin of the Trisul Glacier. The upper section of the glacier curved to the west, so they were not rewarded with a view of their objective until they were able to climb into the upper basin, which at this time was still sporting a considerable amount of fresh snow. (Trisul, located 13 miles southwest of Nanda Devi, can easily be confused with Tirsuli (23,208 ft), located 15 miles north-northeast of Nanda Devi.)

They set up camp mid-way up the glacier, but the following twenty-four hours were so cold, snowy, and windy that they retreated part of the way back down the glacier in search of a bit more tranquility from the elements. It was in this camp (~15,500 ft) that Mumm experimented with his pneumatogen apparatus; he donned the face mask for a few minutes and then removed the mask and smoked his pipe. His evaluation was rather vague: he reported that it seemed to help him enjoy his pipe, at least for a few minutes, but then he noted that it did leave him breathless. In any case, the apparatus was not used on the subsequent climb of Trisul. (I have seen some incorrect reports that it was used on the climb, but they have mistaken this short test with the actual push to the summit.)

On the morning of June 11, with the weather improved but still not ideal, Longstaff, the Brocherel brothers, and a Gurkha named Kharbir—who had been on the Graham expedition—headed for the summit of Trisul ('Trident of Shiva,' because it has three summits when viewed from certain directions). Mumm was not up for the climb, so stayed in camp. As it turned out, Bruce showed up at basecamp two days later, with an improved knee (it had been abscessed), but then immediately fell victim to a fever.

The climbing party established its ultimate camp at 17,450 ft. That evening, they resolved to reach the summit in a single push from this camp, an effort which would require ascending some 6,000 ft of the North Ridge. The next morning, summit day, it was cold and windy but the sun was out. They were able to make good time on the lower slopes of the North Ridge. When they reached steeper terrain, the foursome divided into two rope teams (only Longstaff was wearing crampons). The wind never did diminish throughout the day; nevertheless, they pressed on up the ridge, reaching a

triangular-shaped snow dome around 4 p.m. They initially thought they were on the summit but further analysis by Longstaff seemed to indicate that the highest point was probably farther along the ridge towards the south. Despite the late hour, they battled the wind as they crept along the corniced ridge. Fortunately, they reached this 'high point' in short order and peered down the steep south face of the mountain (they crawled out onto the edge of the cornice for the view). They were too cold to spend any time there, so they moved back along the ridge to the point they had initially thought was the summit. They had climbed nearly 6,000 ft in ten hours, all of it led by Alexis Brocherel. This is one of the few examples prior to the 1970s where an Alpine style attempt led to success.

After renewed analysis, they concluded that this indeed was the highest point at 23,406 ft (today 23,360 ft), not the bump on the corniced ridge to the south. The descent was uneventful; they reached their camp in about two and a half hours. Instead of diving into the tents, they packed up their gear and moved camp down some 950 ft to the site of their first camp (16,500 ft) established about a week prior. No matter how you judge it, this had been an epic day.

The following morning, despite the toils of the previous days very long climb, Longstaff and Alexis ventured up to the head of the Trisul Glacier in order to complete the survey work. They were able to reach a low spot on the ridge (Trisul Gap, ~21,325 ft) after a couple of hours of toil; they were rewarded with a view to the south. The southern side of the pass looked treacherous, as it dropped down to what they thought was the Kurumtoli Glacier. In reality, the small glacier they viewed is the Kail Gal Glacier; the Kurumtoli Glacier is well to the west and not visible from this pass. The confusion appears to be the result of the imprecise nature of the map they were using.

A big peak had been climbed, but the expedition was far from over. Although Bruce had made it up to basecamp, he was now weak from a bout with malaria; the vanguard of the expedition—including Bruce, who was able to walk—made the trek down to the Dhauli Valley. Meanwhile, Longstaff—still full of energy—took two Gurkhas and headed up the Rishi Ganga (eastwards) towards Nanda Devi. They started out on the south bank but the next day crossed over to the north on some avalanche debris. They found that the north bank was just or more inhospitable than the south bank. Despite the difficulties, they were rewarded with a spectacular view of Nanda Devi, but it was obvious to Longstaff that they were not going to be able to proceed up-valley any farther. He also noted that the lesser of the two evils was the south bank, which as we will see, is the 'route' that Shipton and Tilman took in 1934.

By mid-June, the expedition was reunited in the Dhauli Valley; their main aim at this point was, as Mumm describes it, “a brief orgy of repose amid such luxuries as tea with milk in it, perhaps bread, and possibly jam omelets.” Although the monsoon would begin any day, they made their way northward through the villages of Malari and Niti. In the latter, they hired eighteen yaks and fourteen porters in order to explore the region southeast of Kamet. They were able to work their way up the lower section of the Raikana Glacier towards Kamet. A few miles above the terminus, they found a tributary glacier which led to the lower slopes of Kamet, and hence they called it ‘Kamet Glacier’ (referred to by Smythe’s 1931 expedition as the ‘East Kamet Glacier’ and today labeled as ‘Purbi Kamet Glacier.’ Longstaff’s map in his 1950 autobiography labels it as the ‘East Kamet Glacier,’ but this is forty years after their foray and hence he adopted the most current name).

A small contingence spearheaded by Longstaff, including the still not healthy Bruce, were able to work their way up the Kamet Glacier and ultimately the southeast slopes of Kamet to a height a little over 20,000 ft. Over the previous days, the weather had been mostly cloudy, which was to be expected as the monsoon had now begun. The low, persistent clouds did not help in their orientation. At one point, through a rift in the clouds, they could see that they were not climbing on the slopes of Kamet, but on an outlying ridge with a vast chasm intervening. They decided that Kamet, with its long approach and avalanche-prone terrain, was beyond their grasp; at least the east side. With what time remained in the life of the expedition, they decided to move as rapidly as possible to the west side of Kamet and make a reconnaissance if not a full-on summit attempt.

The expedition was still sizeable, so the bulk of the gear took the long way around to the west—back down the Dhauli Valley to Joshimath, and then northward along the pilgrim route to the villages of Badrinath and Mana. The climbers took a shortcut; from the village of Gamsali, they headed northwest past the Banke Glacier to Bhyundar Pass (16,688 ft). On the west side of the pass, they wandered through the verdant grasses and flowers of a large meadow (the Valley of Flowers) before tackling another ascent to a col which allowed them access to the Alaknanda Valley just below Badrinath. At this point in Mumm’s narrative, he makes some suggested corrections to Longstaff’s survey work with regard to the position of Gori and Hathi Parbat, and some of the smaller local glaciers. This is worth mentioning because it once again illustrates that surveying in this type of complex terrain was not easy and at times led to lively debates amongst the various explorers as to the actual lie of the land.

From the Bhyundar Valley, they ascended steep slopes to a pass known as ‘Khanta Khal’ (14,750 ft). On the west side, they descended some 6,000 ft in two and a half hours to the Pilgrim Path that

linked Joshimath with Badrinath. It was now mid-July and the path was full of Hindu pilgrims from all walks of life, sporting their various and sundry colorful dress. Their common goal was Badrinath, with its temple dedicated to Vishnu as well as the purifying waters of the Alaknanda River.

The expedition set up camp just outside of town and began to discuss future plans. They decided to move up to the northernmost village of Ghasoli and take a closer look at Kamet from the west. When they reached Ghasoli, Major Bruce had another attack of fever which put him out of commission. The monsoon rains were frequent and heavy. The Brocherel brothers made a reconnaissance to the northwest of Kamet but ended up at Mana Pass (18,478 ft) on the border of Tibet far from the mountain.

With the weather a major factor and the difficulty of access to the mountain, Longstaff decided that there would be no attempt on Kamet. In fact, as morale waned, the expedition ground to a halt. The only remaining act was for the expedition to extract itself from Garhwal via Joshimath, the Kuari Pass, returning to Almora. Mumm, at the invitation of Bruce, spent the last part of August and September exploring Kashmir, while Longstaff headed back towards Trisul. Longstaff wanted to explore the western side of Trisul with a small party, but due to poor weather opted to move to the southeast side of the mountain, where he spent a week getting acquainted with the local rock and snow.

So, what do we make of this expedition? It had always been advertised as a combined mountaineering-exploring trip, which it certainly was. They did cover some new ground, made the first ascent of Trisul, and laid bare some of the intricacies of the topography via the survey work. Longstaff published a revised map of the region, which while certainly not perfect, was an improvement. The expedition did learn firsthand the difficulties of operating during the summer monsoon season. Mumm's pneumatogen oxygen experiment was a bust. The only time he mentioned it in his narrative was when he used it on the lower slopes of Trisul. Evidently, no other expedition member was interested in trying the apparatus.

Into the Karakoram

During the summer of 1909, Longstaff ventured into the Eastern Karakoram; he was drawn there in large part to solve, once and for all, the location of the semi-mythical Saltoro Pass (Map 9). Climbing a big peak was not on his agenda of this expedition. Elsewhere, the big news that April had been the claim by Robert Peary and his team that they had finally reached the North Pole. Whether they actually did or

only got close is still open for debate. This exemplifies the idea that exploration frequently generates controversy. And so it would be with the Saltoro Pass.

Recall that in the 1830s, Vigne had looked for a pass that linked this part of Baltistan with Turkestan—that is, a pass between the Muztagh Pass in the north, and the Karakoram Pass in the south—and he never found it. In 1889, Younghusband also spent some time searching for the pass, and his guide took him to the upper Urdok Glacier to the east of the Gasherbrums. From the ice, he thought he saw a pass on the high ridge to the south, but he could not reach it; this did not stop him from speculating that this must be the Saltoro Pass. On a map that Longstaff had in his possession during the 1909 expedition, the map-makers with the blessings of the Survey of India had placed the Saltoro Pass much farther to the south from where Younghusband thought it was located; Longstaff was determined to solve this mystery. (I have not been able to locate this old map with the Saltoro Pass labeled on it; it would be interesting to see where the surveyors had placed it.)

For companions, Longstaff invited Morris Slingsby, a young junior officer in the Indian Army; Slingsby in turn recruited two Pathans from his rifle company (Slingsby was subsequently killed in World War I). Longstaff also invited Dr. Arthur Neve, a medical missionary based in Kashmir, to join the group. Dr. Neve mainly worked out of the mission hospital in Srinagar, but when opportunity allowed, he ventured far afield. He was a full-time medical doctor and part-time naturalist and explorer. His book, *Thirty Years in Kashmir* (1930), is a well-written recollection of his adventures, including two expeditions to Nun Kun and several into the remote reaches of Ladakh.

The small party ventured up the Saltoro Valley to the Bilaphond Glacier (now called the 'Ghyari Glacier'). Several days later, they reached the pass that separated the Ghyari Glacier from the Lolophond Glacier to the east (now spelt 'Lolofond'). Longstaff declared that this was the Saltoro Pass (18,200 ft). The expedition then descended the Lolofond Glacier to its junction with the Siachen Glacier. Longstaff noted that the Siachen was by far the largest glacier he had ever laid eyes on. For the time that this small expedition spent on the Siachen Glacier, they thought—according to Neve's account—that they were north of the main Karakoram Range and technically in Chinese Turkestan. This is probably so, because they had come to believe that the pass that they had crossed from the Ghyari to Lolofond glaciers was the Saltoro Pass, which supposedly connected Baltistan with Turkestan. (For an expanded discussion on the Saltoro Pass, see the sidebar associated with the 1912 Workman Siachen Glacier expedition at the end of Chapter 14.)

The leader was also impressed with the tall peaks to the north, a region the Balti porters called 'Teram.' In fact, Longstaff noted in a two-page article published in *The Geographical Journal*, Vol.35. No.1, pp.64–5, that the high peaks of the region were not on the most recent Survey of India maps. In an attempt to measure the altitude of Teram Kangri, he derived a value of 27,610 ft, which is very wide of the mark of 24,489 ft, measured the following year by a surveyor from the Survey of India. (Today the accepted height is 24,219 ft and the main peak was first climbed by a Japanese expedition in 1975.) In Longstaff's book, *My Voyage*, he explained how he had made this mistake; his baseline was too short and the angles to the peak far from ideal, hence his vertical angle measurements were too large. With limited supplies and no supply chain established, Longstaff decided to retreat from the central Siachen Glacier back over their route of entry.

By now, it was early July, and Longstaff was very keen on exploring the upper Nubra River and especially the lower Siachen Glacier from whence the Nubra River emanates. But he had to wait until the fall, when the water levels in the river would drop enough to allow a party to make its way upstream. In the meantime, Slingsby and Longstaff explored the country to the south of the Ghyari Glacier. They trekked along the Shyok River to the confluence with the Nubra. In the lower Nubra Valley, they found lateral moraines some 2,000 ft above the valley floor—evidence that the Siachen Glacier (or predecessor) had in the past been of monstrous proportions. At this point in time, Slingsby's leave from the Army had expired, so he headed home. His replacement was a Captain D. Oliver, who was the British Joint Commissioner for Ladakh.

Oliver and Longstaff proceeded over the Saser Pass (17,753 ft) and then took the less traveled route northward via the upper Shyok Valley. This took them past the Rimo glaciers and onto the Depsang Plain, finally reaching the famed Karakoram Pass. (All of these places were explored in detail by later explorers, so I will defer comments until later chapters.) The party then returned to the upper Nubra Valley via the same route. By mid-September, water levels in the Nubra River had dropped enough so that the river could be forded when necessary; however, there was a new concern—quicksand. With the aid of a local headman, the small party safely navigated its way to the terminus of the Siachen Glacier. Longstaff reported that this lower section of ice was a mix of ice pinnacles and crevasses, with several tributary glaciers entering on the west side. They ventured some 10 miles above the terminus and after climbing a side spur were rewarded with an expansive view of the middle and upper sections of the glacier. Oliver had to return to duties, so Longstaff decided to call it a summer and returned to civilization via Ladakh.

During World War I, Longstaff volunteered for duty and was posted to Fort Gupis, a small outpost on the Gilgit River, some 70 miles northwest of the town of Gilgit, the eastern-most edge of the Hindu Kush (districts of Yasin and Chitral). This region is where the Himalaya, the Karakoram, and the Hindu Kush meet. Longstaff was both the assistant commandant of the Scouts and Assistant Political Officer. Although the conditions were primitive, he noted in his autobiography that, "… now I was being paid more than I had ever had to spend for doing what I particularly wanted to do." He was able to venture far and wide on his official duties, showing the flag and helping settle legal disputes. He was not able to do any climbing, nor was he able to make the journey into the Pamirs, which had become one of his main goals. This was in large part because his military-diplomatic career had come to an abrupt end in October 1917, after he was hit in the head with a polo ball and sent back to England.

His mountain travel days were not over yet. In 1922, Longstaff—now aged fifty-seven—was asked by General Bruce to join the British effort to climb Mt. Everest from the north. Although Longstaff was past his prime climbing days, he went along in the role of advisor, physician, and naturalist—leaving the hard and high adventures to the younger men. He admitted that he had no love for this type of bloated expedition; however, the lure of being able to travel in Tibet was too strong for him to refuse the offer. Several climbers got as high as 27,000 ft but came off the mountain with frostbite. Longstaff was on hand for the weeks' long evacuation back to Sikkim. Longstaff also made a brief return visit to the Garhwal in 1927.

What do we make of Thomas Longstaff's exploration of the Himalaya and Karakoram? He was certainly high energy—always on the move, always wanting to know what was over the next pass or ridge—in other words, the consummate explorer. Overall, he loved to travel light, a *modus operandi* emulated by Smythe, Tilman, and Shipton years later, who by the way came to see Longstaff as their mentor. He was a legitimate naturalist, mainly in ornithology and botany. Many of the specimens he collected went to a host of British institutions. In the Eastern Karakoram, he found a new species of weasel, aptly named *Mustela longstaffi*. When it came to surveying, I have to be a bit more critical. It would appear that his temperament was not that conducive to this line of work. On one hand, the surveyor must roam wide and far, but they also have to stay in one place long enough to come to terms with the terrain. It would appear that his survey work suffered from constantly being on the move and not having enough patience to be *in situ* when the plane-table and theodolite were calling.

It was in the late 1920s through to the early 1930s that he turned his attention to arctic exploration, mainly on Spitzbergen and Greenland. During the 1930s, he served as Honorary Secretary

for the Royal Geographical Society, and then in the 1940s he was President of the Alpine Club. He was much sought after by the younger generation of explorers and mountaineers during the 1920s to the 1940s. He died in 1964 at the age of eighty-nine.

Chapter 10

The Duke

While Longstaff, Neve, and Slingsby were making tracks through the Eastern Karakoram during the summer of 1909, a little to the northwest one of the grandest expeditions of this age was in progress in the Central Karakoram; it was led by the thirty-six-year-old Luigi Amedeo of Savoy, otherwise known as the 'Duke of Abruzzi.' The expedition objectives were to collect an assortment of scientific data, survey the terrain, and to climb several mountains. The scientific goals were multifaceted: to gather meteorological, geological, botanical, and glaciological data. In addition, they hoped to study the effects of altitude on humans. They were also keen on extending the topographical survey work started by the Conway and the Eckenstein expeditions.

There were also mountaineering objectives; they hoped that after trekking up the Baltoro Glacier, to reconnoiter a route up K2, and if possible, make a bid for the summit. If K2 proved to be unclimbable, they hoped to find some other worthy objective. The Duke of course knew from previous explorers that there was a plethora of unclimbed mountains in the area; in fact, this is one if not the greatest concentration of high peaks on Earth. The question was whether any of these awe-inspiring peaks could be climbed, given the skill level of the expedition members and of course the weather and snow conditions. Even though several expeditions had been up the Baltoro already, only a few of the ridge lines and a couple of minor summits had been trodden by a human—everything else was virgin ground.

By the time of the Karakoram expedition, the Duke—who was the cousin of the King of Italy—had in 1897 made the first ascent of St. Elias (18,009 ft), situated on the Alaska-Yukon border. He also led an expedition to the Arctic in 1899, losing two fingers to frostbite. By 1906, he was exploring and climbing the Mountains of the Moon in Rwenzori. He had gone through his climbing apprenticeship in the Alps while a teenager and young adult.

This expedition was funded in part by the Duke, from private benefactors, and from several university grants. In order to facilitate the mountaineering portion of the agenda, the Duke enlisted the assistance of a handful of Alpine guides—Joseph Petigax and his son Laurent; as well as Alexis and Henri Brocherel. All the guides had prior experience in the Karakoram or Himalaya. The Petigaxs had been on the 1903 Workman expedition to Chogo Lungma Glacier, while the Brocherel brothers had been on

Longstaff's 1905 and 1907 Garhwal expeditions, the latter making the first ascent of Trisul. There Italian porters were also included: Emil Brocherel, Albert Savoie and Ernest Bareux.

Another important member of the party was Filippo De Filippi, a medical doctor by training. He went along not only to heal the sick and attend to any inflicted wounds, but also acted as botanist and the expedition's chronicler. He wrote the official account, *Karakoram and Western Himalaya 1909*. Four years later, he was the leader of another Italian expedition, this one wintered over in Baltistan (around Skardu), and then explored the Rimo Glacier Basin, which is located due west of the Karakoram Pass (see Chapter 15).

The Duke also had the foresight to enlist the talents of Vittorio Sella as expedition photographer. His photos have subsequently been widely acclaimed and he goes down in the short history of outdoor photography as one of the greats. He not only took photos for their pure aesthetic value, but also spent a considerable amount of his time and effort taking panoramic images that were used by the surveyors. Recall that he had been a member of Freshfield's 1899 expedition which circumambulated Kangchenjunga.

In our digital age, it is easy to overlook the fact that obtaining quality photographs with the equipment available in 1909 involved a lot of work because of the heavy and cumbersome gear. This was back when images were recorded on photographic plates; they were not only heavy but would break quite easily since they were made of glass. Plates were packed in sturdy (heavy) wooden crates, with straw or paper stuff in-between the plates so that they would not shift around. They were then shipped from Europe, put on a train in India, then carried by a porter or on a mule for hundreds of miles. After this, the photographer and his assistant would lug all the gear up a ridge to then wait sometimes for hours to obtain a weather window, and then shoot a couple of images; all of this certainly demanded persistence and patience. On most expeditions, the plates were developed on site, but then the exposed plates would have to be carefully re-packed for the return trip to Europe.

The Duke's expedition arrived in Rawalpindi with some 13,280 lbs of gear—not only climbing gear, but all the equipment they would need for their scientific work as well. They were to shed little weight as the mountain of baggage was transported towards the Baltoro Glacier. It is interesting to note that their baggage included 450 pounds of silver coins in order to pay the countless porters who bore the burden of the expedition on their backs. By modern standards, this seems ridiculous; however, we must consider the times—paper money was an alien concept to villagers living in remote parts of the

Karakoram-Himalaya. It was 'hard' currency or no porter service. This was even an 'improvement' on earlier times when money, no matter what it was made of, had no value in these remote villages. Prior to the 20th century, the local economies had been based on bartering.

In the spring of 1909, the Italians arrived in Srinagar, the jumping-off point for almost all travelers headed into the Karakoram or Ladakh. Recall that there were two routes to choose from: one route led north from Srinagar up over the Tragbal and Burzil passes to the east of Nanga Parbat, and then across the Indus River and on to the town of Gilgit. This was the route to Hunza and the northern Karakoram; Conway had used it in 1892. The second route went east from Srinagar, crossing the Zoji La into Ladakh and then northeast to Leh. From Leh, expeditions followed the Indus River to Skardu. This was the preferred route to the Central and Southern Karakoram; Younghusband had used this route in 1889 when he was trekking northbound, but returned to Kashmir (southbound) that autumn using the Burzil Pass route.

By late April, the caravan of Europeans and some 171 porters departed Leh en route to Skardu via the Zoji La (11,575 ft). After a short stay in Skardu and the perfunctory visits with local dignitaries, the party reached the terminus of the Baltoro Glacier in mid-May. The approach march—with its many river crossings—had been challenging at times, but overall the expedition was operating on all cylinders. In fact, in the Braldu Valley (they refer to it as the 'Biaho Valley') they caught some Himalayan trout in several non-glacial streams (that is streams that do not contain glacier silt) that emerged from the sands of the valley.

The terminus of the Baltoro Glacier at that time was lobed; the left (north) extended some half a mile farther downstream than the right side. There was no terminal moraine evident, which led De Filippi to suggest that the glacier had retreated and then advanced in relatively quick succession; the latter process would obliterate any old terminal moraines. In fact, recent studies have shown that the Baltoro Glacier has indeed advanced and receded many times in recent centuries. Overall, the *average position* of the terminus has changed little since Europeans first began to visit the region.

As the expedition slowly weaved its way up the lower reaches of the rock-covered glacier, it was employing over 260 porters. They were led up the Baltoro by a local man, Abdullah; although we are not given his qualifications, he was no doubt a local dignitary. The track was for the most part up and down countless ice hummocks. Even though they were on the glacier, this lower section was almost completely covered by multicolored fragments of granite, marble, and limestone which had been

eroded by tributary glaciers or was a product of frost expansion. These ranged in size from pebbles to blocks 20 ft across. Their route wove its way through a labyrinth of ice and rock; Abdullah, two of the European guides, and the Duke scouted the route well in front of the porters and then marked the 'path' with cairns.

It was during these first few days on the glacier that views of the Paiju Peak (21,686 ft, first ascent in 1976 by a Pakistani expedition) and the magnificent granite spires and needles that line this part of the valley became apparent. De Filippi compared these rock formations to the Dolomites but on a much larger scale. At times, the party moved off the glacier proper and trekked in ablation valleys. The drawback to these lanes of approach was the nearly continued rockfall from either the steep mountain slopes or from the unstable moraines. As they made their way up-glacier, they encountered an increasing number of turquoise-colored lakes of various sizes which dotted the surface of the ice.

Ten miles up the Baltoro, on the right-hand side they came across an ideal spot to camp. Some 300 ft above the edge of the glacier was a gently sloping area covered in grass with a sprinkling of wildflowers. They referred to it as 'Rdokass,' but today it is known as 'Urdukas' (13,290 ft). There were many granite boulders around which the porters could build their shelters and cook their chapattis over open fires. In that day and age, there was plenty of underbrush from which the porters could harvest firewood. (Reports from recent expeditions unfortunately state that the idyllic camping spot that the Italians enjoyed has turned into a cesspool due to overuse and heaps of garbage.) It was in the vicinity of Urdukas that De Filippi reported seeing many rodents (what kind is not stated), a handful of species of birds, and the hoof prints of ibex.

The Duke designated Urdukas as the expedition's basecamp. The small herd of sheep that the Italians had purchased as 'meat on the hoof' back in Askole had been herded up the glacier by several shepherds, and now took up residence along with the humans. The imported animal population also included what De Filippi just noted as 'fowl'; they were probably chickens, taken there for their eggs and on occasion for their meat.

On the trek, Sella and his assistants had been moving around independently of the main body, a routine that would continue through the length of the expedition. He not only took photos of the jaw-dropping landscape but included expedition life, as well as the entourage of porters.

In addition, although this was still the approach, science had not been completely neglected. Below Urdukas, in the middle of the glacier, a large rock cairn was constructed and then surveyed to

several benchmarks which they had established. Sixty-two days later, as the expedition headed for home, the cairn was re-surveyed. They found that it had moved on average 70 in. per day. This is an astounding rate, much larger than any value found on other glaciers in the Karakoram by other explorers. They repeated this experiment on the Godwin-Austen Glacier; however, the rate of movement was on the order of 23 in. per day.

The weather up to now had been a mix of clouds and storms with some occasional periods of clear skies; overall, very acceptable compared to what previous expeditions had experienced in the region. The main body of the expedition continued up the left margin of the Baltoro, where they found the going considerably easier (smoother) than the lower sections; however, this came at a cost—they now started to encounter a scattering of crevasses. The middle of the glacier was dominated by a 100—200-ft-high medial moraine. Up-glacier, when the medial moraine ran out, they came across 30–70-ft-high ice pyramids with perfectly sharp points at the top. It was also in this region of the glacier that they found a large area of glacier tables.

By late May, the frequency of storms decreased, allowing the expedition its first up-close views of the surrounding peaks. Some 10 miles distant to the southeast was Masherbrum, the guardian of the south side of the Baltoro. To the northeast was Mitre Peak (19,766 ft, first ascent was in 1980 by Ivano Ghirardini, who climbed solo), the Gasherbrums were due east, and then to the northwest there was the always impressive Muztagh Tower (23,897 ft, first ascent was in 1956, when a British expedition climbed the Northwest Ridge while a French party, five days later, availed themselves on the Southeast Ridge). The expedition's first view up the Godwin-Austen Glacier towards K2 was through veil of mist which was slowly dissipating. They spent the next hour gazing at the scene that was spread out in front of them, a reward after many weeks of travel. De Filippi wrote: "Down at the end, alone, detached from all other mountains, soared up K2, the indisputable sovereign of the region, gigantic and solitary, hidden from human sight by innumerable ranges, jealously defended by a vast throng of vassal peaks, protected from invasion by miles and miles of glaciers." They had arrived at Concordia, the confluence of the Godwin-Austen and Broad glaciers with the Baltoro Glacier.

The Duke was eager to make an attempt on K2 and hence a basecamp was established at the confluence of the Savoia Glacier with the Godwin-Austen Glacier on May 27 (the former glacier was named by the Duke after the House of Savoy from which he was a descendant). Several exploratory treks were made around the southern reaches of the mountain before the European guides led an attempt on the South Ridge. The climbers could see from basecamp that there was plenty of verglas on

this route; nevertheless, they were hopeful that a few days of sunshine would expose the rock underneath. The climb commenced on May 30; they found from the start that the climbing was considerably more difficult than anticipated. They ascended to the neighborhood of 20,000 ft before the guides decided the route was too steep; it was not feasible for the porters to ferry supplies up, even with fixed ropes.

Their first attempt was a learning process; from below the mountain did not appear as steep as it actually was. The other factor was one of scale—everything was much larger and higher than what the climbers were used to seeing in their beloved Alps. In order to have a remote chance of reaching the summit of one of these massive Karakoram peaks, they would have to rethink their climbing strategy. Reading De Filippi's account (he was not one of the initial climbers), one comes away with the impression that the guides thought that they could climb the upper mountain at these high elevations, Alpine style—as the Brocherel brothers had on Trisul three years earlier.

It is interesting to note life at K2 basecamp; the porters cooked their meals (mainly chapattis) over wood fires, the wood being manhandled up from lower elevations. They also imported fowl, eggs, and roast mutton from their camp at Urdukas—not exactly a spartan camp existence, one more fit for royalty. The Europeans questioned the porters regarding the names of local mountains, especially K2. They referred to K2 as 'Lanfafahad,' but as noted by De Filippi in his account, other porters on different expeditions had told those Europeans completely different names. De Filippi concluded that K2 really had no local name. This is not surprising, since it is not visible from any reasonably close village—Askole being the closest village, which is still some 50 miles down-glacier. There is no view of K2 from Askole or the surrounding villages; likewise, there is no view from the Baltoro Glacier until Concordia.

Since the South Ridge had turned out to be unclimbable for his team, the Duke set out on exploring the area to the west. In early June, part of the expedition proceeded up the Savoia Glacier. The climbers were able to ascend a col at the head of the glacier, which was named 'Savoia Pass' (Saddle), which they listed as 21,870 ft (the pass was also named by the Duke; a more accurate elevation is 20,400 ft but even that is approximate). This put the team on the northwest side of K2, but to the dismay of the party, the grand view they had been expecting never materialized. What they were granted was an extremely limited view of K2, as well as the terrain to the north. The problem was the cloud cover and orientation of the pass; they were able to make out a glacier (K2 Glacier) at the base of the pass on the north and some of the lower slopes of K2, but that was all.

Undaunted, the expedition now turned its attention to the east, that is the upper basin of the Godwin-Austen Glacier. They soon found out that the maps produced first by Conway (who had not traveled up that far, so based on guess work) and later by Jacot-Guillarmod (member of the 1902 Eckenstein expedition) were quite inaccurate. The Godwin-Austen Glacier extends well to the northeast of K2; its upper basin lies at the base of a peak they dubbed 'Staircase Peak' (Skyang Kangri, 24,786 ft).

Due east of K2, the Godwin-Austen Glacier bifurcates with a branch extending west-southwest, which the expedition ventured up. The guides and the Duke reached the pass located at the head of this glacier without difficulty, and this time—unlike at Savoia Pass—were rewarded with a magnificent view, in this case of the Gasherbrums and points north. A week later, Sella and his assistants made a second ascent to this pass and pushed a short distance farther north, from which the photographer took several panoramic images looking east (the north side of Broad Peak and the Gasherbrums). The Duke named this geographic feature 'Sella Pass' (est. 19,900 ft), a name which it also retains to this day.

Meanwhile, the expedition had pushed up the entire length of the Godwin-Austen Glacier, eventually reaching Windy Gap (20,450 ft). From a camp established at the base of the gap (south side), survey work continued despite the wind and frequent snow flurries. It was now mid-June, and the Duke was anxious to climb a mountain; he therefore set his sights on the top of Skyang Kangri, since they were already camped on its southeast flank. The small contingency of climbers made two attempts, but the difficulties of the route and weather forced a turnaround at 21,650 ft. The climbers were in possession of ten-point crampons which they used from time to time, but they spent a considerable amount of time cutting steps in the ice as well. (The first ascent of Skyang Kangri was in 1976 by a Japanese expedition also from the Godwin-Austen Glacier.)

By late June, the Duke realized that K2 and its satellite summits were not going to yield to their style of climbing, henceforth basecamp was dismantled and the expedition was on the march eastwards, to the head of the Baltoro Glacier. (As a side note, the Duke nor any member of the expedition set foot on the Southeast Ridge, which was later named the 'Abruzzi Ridge.' Currently, it is referred to as the 'Abruzzi Spur.') The expedition, which up until then had covered considerable ground around K2 but had been denied any summits, set its sight on Bride Peak (Chogolisa, 25,157 ft), at the head of the upper Baltoro Basin. In the Balti language, Chogolisa supposedly means 'the great hunting ground.' This is interesting, because there is nothing for tens of miles but ice, snow, and a little exposed rock; so, one ponders: where does the hunting ground fit into this mix?

From afar, the climbers within the party thought that a route up the North Face was a real possibility; once they arrived at its base, however, they ruled it out. Henceforth they directed their attention to a saddle to the east (Chogolisa Saddle) from which they hoped they would be able to find a reasonable route up the east ridge to the top. From their camp at the base of the mountain (on the North Chogolisa Glacier), the route to Chogolisa Saddle did not look difficult.

They had been deceived once again. As it turned out, the portion of the glacier which extended up to the saddle was extremely crevassed; in addition, there was a layer of deep, soft snow which slowed progress even further. At first, the group moved en masse, but as the difficulties increased, the guides and the Duke scouted ahead, followed by the contingent of porters. After eight days of effort through less-than-ideal weather conditions, a camp was finally established on the saddle at 20,784 ft.

The Europeans were impressed with the ability of the Balti porters to survive the cold and wind with very limited gear, and to perform the work requested of them with little complaint; all of this over highly glaciated terrain on which most had no previous experience. Lower down the Baltoro Glacier, the porters mainly camped under a rock shelter where available or piled up rock walls 3 or 4 ft high, and then roofed the structure with a tarp provided by the expedition. The porters that went to higher elevations were given some rudimentary climbing gear but nevertheless they had the ability to survive and contend with weather conditions that no Westerner would even contemplate going out in.

From Saddle Camp, the guides led up the ridge; although the weather was now ideal, as it had been the day before, the snow was very soft, which made for a slow ascent. On the positive side, a cloud-free sky meant a 360^{o} view of the Central Karakoram. The climbers set up their penultimate camp at 21,673 ft. On summit day, they continued up the ridge using snowshoes for a while, but later opted for crampons. It was foggy and the snow looked like it might slide at any moment. The climbers held council and decided that conditions were not favorable and it would be foolhardy to press on; they had reached what they estimated to be 23,450 ft. Their decision to turn around ended up being a good choice; they returned to their high camp at the start of a storm that lashed the peaks with wind and snow for the next four days.

After the storm, despite a considerable amount of fresh snow that had settled on the terrain, they set off for their second summit attempt. It turned out that the snow was a morass; persistence, however, paid off as they slowly forged upwards. In order to increase their odds of success, they decided to install another camp—this one was placed at 22,483 ft. July 18 was the day of reckoning—it

was summit day. It had been clear the previous evening, but by morning, when they emerged from their two small tents, snow was falling once again. They crept up the ridge, which got narrower as they ascended; there were large cornices to their right (north) and a steep slope covered with unstable snow on their left (south). Visibility remained poor throughout the climb. That afternoon, at an elevation they estimated around 24,600 ft, they knew the summit was not within their grasp, so they turned around. Despite the poor visibility, they knew that the ridge continued upwards for some distance. If their determination of elevation at their high point was correct, then they had established a new altitude record by some 700 ft. They had gained over 2,100 ft from their camp on the second summit bid, an accomplishment in and of itself considering the weather and snow conditions.

After this attempt, the expedition slowly extracted itself from the Baltoro Basin, retracing its inbound route. By late July, the team was back in the village of Askole; after a short hiatus, they continued the journey to Skardu via the Skoro La, which shaved three days off travel time.

What should we conclude about this massive undertaking? First, the European members maintained very friendly relations with the Balti staff that they employed. There were no porter strikes which plagued later expeditions to the area, and very few porters deserted. Maybe it was the ease of the Italian demeanor or possibly they were lucky to get a crew that were not jaded by previous contact with Europeans. In any case, it made the logistics, which were monumental, considerably easier.

Second, Sella's photographic work was first-rate; his panoramic images were a bonus to the surveyors. Third, the map that was produced refined previous works and added some new details as well. Fourth, meteorological observations were taken at all camps; atmospheric pressure from each camp was compared to those at the observatories in Skardu, Leh, and Gilgit in order to determine elevations based on barometer measurements. Fifth, like the Conway expedition, they conducted geological and botanical surveys of the areas through which they traveled. They observed a handful of plants and flowers in the 16,000–18,000 ft elevation range.

Sixth, various members of the expedition spent considerable time at high altitudes, more so than previous expeditions. It is important to note that in 1909 the effects of a prolonged stay at elevation on the human body was not completely understood. There were many medical pundits at that time that insisted that a person, even if physically fit, would not be able to live and function at moderate-to-high altitudes for any length of time. The Duke and guides spent some thirty-seven days at or above 16,000 ft, of which seventeen days were at or above 18,000 ft, and nine of those were at or

above 21,000 ft. The only health issue that altitude produced as noted by De Filippi, was the reduction in most members' appetites. One of the European porters (Emil Brocherel), when climbing Skyang Kangri, had experienced some temporary (lasting several days) health issues: he had a persistent cough, spat up a little blood, and suffered from chest pains. Fortunately, his malady subsided and he carried on with the expedition, going high on Chogolisa with no reoccurring issues.

By any criteria that this expedition is evaluated, one can only conclude that it was extraordinarily successful, even though it did not tread any summits. It was one of the great Karakoram-Himalaya expeditions of all time.

Chapter 11

The Quiet Doctor

We have already seen that the lure of the Karakoram-Himalaya had cast its spell over a wide spectrum of personalities, from the flamboyant to the reserved. From Crowley, who can only be considered as bizarre and brash, to the likes of our next unassuming explorer. Dr. Alexander Kellas was a Scotsman who trained as a chemist (Ph.D.) with emphasis on medical chemistry. By the early 20th century, he was one of the most knowledgeable researchers on the effects of low pressure (high altitude) on the human body. In other words, he specialized in high-altitude physiology. Between 1907 and 1921, he undertook eight expeditions to various parts of the Eastern and Western Himalaya, despite being a faculty member at the Middlesex Hospital Medical School, where he taught medical chemistry. During his mountaineering and exploring career, we know he made a number of ascents at or near 23,000 ft; so not only did he have theoretical knowledge of high-altitude effects on humans, but he also obviously had a wealth of practical experience.

Of all the early Himalayan pioneers noted in the writings of Shipton, Tilman, and Smythe, Dr. Kellas was held in extremely high regard—even though he died nine years before any of them set foot into the Karakoram-Himalaya. In many respects, like Thomas Longstaff, Dr. Kellas was a forerunner to Shipton, Tilman, and Smythe. They were all cut from the same piece of cloth; their *modus operandi* was lightweight expeditions—without the frills, yet practical.

Dr. Kellas was not a 'prolific' writer in any sense of the word; he summarized his expeditions in short articles published in either *The Alpine Journal* or the *Geographical Journal*. He wrote no books, which is unfortunate for us as he covered a lot of new ground and gained keen insight into physiology. He did write a manuscript on high-altitude physiology ("A Consideration of the Possibility of the Ascent of Mt. Everest"), but it was not published until the second half of the 20th century, even though it was written in 1920. Consequently, there is little material regarding the details of his explorations, and hence he is not as widely known today as his exploits dictate. In fact, he is one of the luminaries of Karakoram-Himalaya exploration.

The doctor's first venture into the Himalaya was in the late summer of 1907; he trekked around portions of the Pir Panjal, before heading east to Sikkim. What made Kellas different to most other European mountain explorers was the fact that he often traveled only with a local staff; there were no other Europeans. There were some exceptions to this, but overall, he was a one-man show.

His first objective in Sikkim was to trek to the northeast of Kangchenjunga, specifically the Zemu Glacier—a region that he would often visit in subsequent expeditions. He made two attempts on a peak called Simvu (22,348 ft), but due to the snow conditions turned around at 20,700 ft (first ascent was an Indian Army expedition in 1980). The small expedition also made two unsuccessful attempts to get to Nepal Gap; once again, the weather and soft, unstable snow were to blame. Nepal Gap is a 20,321 ft notch in the ridge about 5 miles north of the main summit of Kangchenjunga; it separates the Nepal Gap Glacier on the east from an unnamed tributary of the Kangchenjunga Glacier on the west. The Nepal Gap Glacier is itself a tributary of the Zemu Glacier, lying due west of the latter. After the expedition, in a letter to a friend, Dr. Kellas mentioned the fact that this—his first foray into the big mountains—was "quite unsuccessful."

In 1909, he was back in Sikkim; his first objective was an attempt on Pawhunri, 23,180 ft (today known as 'Pauhuri,' 23,375 ft), located in northeastern Sikkim. The doctor and several local men reached 21,700 ft but were thwarted by deep snow and active snowstorms. He next turned his attention to the Jongsang La (20,223 ft); this is the same pass that the Freshfield expedition had crossed in 1899. Kellas spent several weeks exploring the northwestern corner of the Kangchenjunga Massif. The chemist and his climbing staff failed to summit Langpo Peak (22,814 ft) on their first attempt, but a week later they were standing on its summit. They also gave Jongsang Peak (24,550 ft) a close inspection; we do not have any details of what transpired, but they failed to reach the summit. (Jongsang Peak was first ascended in 1930 by the international Himalayan expedition, with Norman Dyrenfurth as leader.) After returning to Sikkim via the Jongsang La, they made a third attempt to reach Nepal Gap, but came up short once again. Thus ended his 1909 campaign.

In April 1911, Dr. Kellas initiated his explorations in Sikkim north and east of Kangchenjunga. We know more about this expedition and the subsequent 1912 expedition because he wrote summary articles in the May 1912 and May 1913 issues of *The Alpine Journal* (also in *The Geographical Journal*, Vol 40, No.3, pp.241–60. A map is included).

The doctor and his small team of local men—including several Sherpas who had been with him on previous expeditions—departed Darjeeling and proceeded up to the Zemu Valley to the glacier of the same name. They set up camp on the edge of Green Lake, which is located on the north side of the Zemu Glacier, roughly halfway up from the terminus. His objective was to find a pass or passes which would link the east side of the Kangchenjunga Massif with that to the west; he hoped that this pass would be easy enough for heavy-laden porters to be able to cross without undue hardship. One glance

at a map or satellite imagery shows that this is a complex topographical area to negotiate—numerous east-west ridges vector off from the predominant north-south ridgeline on which Kangchenjunga is positioned. Dr. Kellas had trekked and climbed there on both his 1907 and 1909 expeditions, but he now focused his efforts on the north-south-oriented ridge, which extends north of Nepal Gap.

The party did manage to find a pass, but it is not on the main ridge; they named it 'Lhonak La' (est. 19,500 ft). It is difficult to find on modern maps but lies on a northeast ridge, radiating from what Kellas called 'Pyramid Peak' (Pathibara, 23,369 ft), just north of the Changsang Glacier and south of the East Langpo Glacier. (There is an unnamed pass marked on Frank Smythe's map of 1931 in this same area.)

Dr. Kellas then trekked to the south, towards the Zemu Gap (19,240 ft); why he chose to go south at this juncture is unclear. When reaching the gap a few days later, heavy fog blanketed the area, and since this was *terra incognita*, the climbers returned to their previous camp on the north side of the gap to wait out the weather. Recall that Freshfield had been in this same location in 1899 but had never set foot on the pass. The next morning, the weather had improved somewhat, but instead of returning to Zemu Gap, Dr. Kellas led the expedition over Simvu Saddle (est. 17,700 ft), which is several miles to the east; they descended onto the head of the glacier of the same name for a short distance. Barred from continuing south due to a heavily crevassed part of the glacier, they retraced their steps and returned to the lower Zemu Glacier.

With the way to the south beset with mountaineering difficulties, keeping in mind that this was mainly an expedition consisting of porters, Dr. Kellas once again looked back to the north. He led the party to the East Langpo Glacier, where he set up a camp, but the doctor and three of the strongest local men continued northward. Subsequently, the foursome ascended Sentinel Peak (21,293 ft). This mountain is located in the upper Goma Chu, just east of the Chorten Nyima La (19,091 ft), a glaciated pass leading into Tibet.

After the descent of Sentinel Peak, the climbing party moved towards the Jongsang La from the north. Once over the pass, now in Nepal for which they did not have permission, they proceeded to what the doctor called the 'South Langpo Glacier,' which today is called the 'West Langpo Glacier.' Although Dr. Kellas had already climbed Langpo Peak (22,814 ft) during his 1909 expedition, he wished to repeat the climb, and in the process, have a good look to the west at Jongsang Peak and its potential

climbing routes. Jongsang Peak had by this juncture in time become the doctor's primary climbing goal; he had tried and failed in 1909, and as time passed it occupied his thoughts regularly.

Over the next two days, the foursome made an attempt on Langpo Peak, but the wind and icy conditions on the final summit pyramid, combined with the fact that the three local men were only wearing cloth-covered boots, made for a rough outing. Dr. Kellas turned the party around some 300 ft from the summit. After an abbreviated foray to the south and west of Jongsang Peak, an area on his map labeled 'Longridge Pass,' it was cut short due to inclement weather and dwindling food supplies; the expedition headed back to Sikkim and the Goma River.

Although the start of the summer monsoon was not far off, Dr. Kellas now opted to move well to the east across Sikkim and try his luck on Pauhunri (23,375 ft), which he first attempted in 1909. Why he shifted operations towards this particular mountain, some considerable distance from where he had been operating, we are not told in his account, although it was probably an attempt to escape the poor weather. His chosen route was on the east, or Tibetan side, so there would have been a reduction in moisture due to the rain shadow effect. In any case, the doctor and several of his faithful Sherpa staff summited via the Northeast Face without undue trouble; unfortunately, the view was limited due to ever-present cloud cover. They did spy some large peaks to the east-northeast which were in northwestern Bhutan. One interesting note made by the doctor at this point is the ability of the local men to far outperform Western climbers above 17,000 ft in terms of cardiovascular performance. The higher he climbed, the greater the gap between the local mountain men with their lifelong acclimation, and his own acclimatization, which had occurred over a short period of time.

After Pauhunri, the party then moved 12 miles to the west; Dr. Kellas had designs on Kangchenjhau (today known as 'Khangchengyao,' 22,602 ft, first ascent in 1982 by the Indian Army expedition). It was over before the attempt had even begun; the weather is cited as being the culprit. It was by now late June and the summer monsoon was well underway; rain and snowstorms (depending on elevation) were the norm on most days. Despite the poor weather, the doctor decided to take a close look at Chumiomo (Chomo Yummo I, 22,405 ft) some 10 miles northwest of Kangchenjhau, lying on the Tibet-Sikkim border.

After several days of probing the west side of the mountain, it was determined that the expedition's efforts should be directed towards the Northwest Face. After navigating through some crevasse fields lower down the glacier, the climbers had little trouble reaching the snow dome which

served as the summit. Although there was some mist swirling around the upper reaches of the mountain, Dr. Kellas noted that they had a fine view to the north into Tibet (this was the first ascent).

It was now mid-July and the monsoon, in a typical year, had another eight to ten weeks before it played out. The doctor decided to shift operations to the far west … in fact, hundreds of miles to the west. Why he chose the central Himalayan districts of Garhwal and Kumaon, which are also racked by the monsoon, we are not told. His intent was to trek up the pilgrim route to Badrinath, continue northward to the western flanks of Kamet, and try his luck on this lofty peak. He did mention in his extremely brief account that "this was not a judicious decision, as our time was too limited." Kamet was just an interlude; the ambitious doctor intended on returning to Sikkim in the post-monsoon season and making an attempt on Jongsang Peak, which was becoming his nemesis.

By late July, he and two faithful Sherpas—Tuny and Sona—were in Almora selecting a new set of porters and expedition staff. The trek towards Kamet was marked at the start by excessive heat followed by days of torrential rain. In Joshimath, they met with some trouble regarding permits; they did not possess the proper documents allowing them to travel to Badrinath and points northward. After a flurry of telegrams, the political ground was made smooth and the small expedition trekked onwards.

The doctor was at the mercy of local guides, as this was his first visit to the region and the maps were unreliable when it came to topographic details. The guides led the expedition up the Khaima Valley, which is one valley too far north to gain direct access to Kamet; nevertheless, they did get a good view of the mountain from the Khaima Pass (unmarked on modern maps). The doctor decided that the western side of Kamet was unclimbable but that the northeast held some promise. (This part of his narrative is very confusing in terms of knowing exactly where he was and what he was looking at. The stated directions often do not make sense. For example, in the statement above, how would he know the northeast would hold promise if he was on the west side of the mountain and had not seen the north or northeast sides?)

However, they did manage to summit a small snow peak (unnamed, ~20,200 ft) near the pass. To the east of the pass, a heavily crevassed glacier barred further advance, so Dr. Kellas decided to take the party northward towards Mana Pass in order to get a look at the northwest side of Kamet. They proceeded some distance up the Dhanarau Glacier (probably the Dakhni Chamrao Glacier on modern maps), obtaining a good view of the northwest slopes of Kamet (the monsoon was being kind to them at this juncture). Dr. Kellas noted that the Northwest Face "looks practical if one can get onto it." With no

hope of getting high on Kamet himself and being anxious to get back to Sikkim, the expedition made a rapid retreat to the railhead at Almora so that they could return to the east. However, Dr. Kellas did not return to Sikkim until the following year for reasons that we are not told; although, he did still hold his teaching position back in England, so it is plausible that he had simply ran out of time and had to return to start the new school year.

Return to Sikkim

By late July of 1912, Dr. Kellas had returned to Darjeeling. His plan of action for the upcoming season was to investigate the northern and western ridges of Kangchenjunga as potential climbing routes, as well as the approaches to these ridges (see *The Alpine Journal*, May 1913, pp.125–53). Despite the fact that summer monsoon season was in full effect, Kellas and thirty-one porters headed north to the village of Lachen. However, en route, due to very heavy rain, the doctor decided on postponing his work on Kangchenjunga and headed to northeast Sikkim—intent on making another attempt on Kangchenjhau. Recall that during the previous summer he had trekked to the base of the mountain but had given up before actually attempting to climb due to poor weather.

With the bulk of the expedition's supplies sent to the Zemu Glacier, Kellas, two Sherpas, and three local porters made their way to the north side of Kangchenjhau (22,601 ft). They established a camp at 19,200 ft at the base of the North Face, and fortunately for them the weather had improved greatly. The next day, the Sherpas and Dr. Kellas climbed to a col at ~21,000 ft, encountering some hard névé en route. Fog enshrouded the upper part of the mountain and since the doctor had only meant this day's work to be spent on route-finding and acclimatization, they descended to their basecamp. That afternoon, it began to snow; it snowed overnight and most of the next day, forcing the climbers to remain in or near camp. However, the third morning was clear, so the climbers headed for the summit. The fresh snowfall was not an issue; they reached the summit plateau around 1 p.m. The view to the north was unobstructed by clouds, but to the south and east clouds were in abundance. As later events revealed, Dr. Kellas and Sherpas probably did not actually reach the highest part of the ridge, hence the first ascent is attributed to the 1981 Indian Army expedition. On the descent, Kellas and the Sherpas lost their footing while roped together; they slid nearly 1,000 ft, coming to a stop in a heap of snow where the angle of the slope decreased. They were shaken up but not injured.

It was now time for Dr. Kellas to turn his attention back towards the area north of Kangchenjunga. A four-day trek and numerous crossings of monsoon-swollen rivers brought the climbers back to Green Lake, where they rejoined a contingency of porters. The weather was generally cloudy and damp, with intermittent rain. Dr. Kellas wanted to try his luck on Tent Peak Pass, so the next day, the whole expedition moved up a glacier (probably the unnamed arm of ice to the east of Tent Peak also known as 'Kirat Chuli,' or possibly the upper Hidden Glacier). The following day, they traversed the pass onto the Changsang Glacier and established another camp. While the porters went down-valley to collect firewood, Dr. Kellas climbed the ridge separating the Changsang Glacier from the East Langpo Glacier. The doctor had been over this ground the previous summer, so it is not clear what his objectives were at this point in time.

He lost several days of exploration due to a mix-up with one of the teams of porters; he had given specific instructions to their leader, but they went afoul anyway. The lost time had been during a period of exceptional good weather. Rebounding from the near early termination of the expedition due to the missing porters, the reunited members headed to the northeast slopes of Jongsong Peak, via the South Lhonak Glacier. It was late August and the snow at their camp (18,700 ft) was deep and soft, as it had been accumulating over the course of the monsoon. The ascent of the peak was in question. As the weather subsequently turned cloudy for the next three days, the proposed ascent was called off.

The stormy weather must have been irksome to the doctor, but not unexpected. His next move was an attempt to put some distance between the monsoon and the expedition. He decided to move to the east-northeast and trek through the mountains and lakes on the Tibet-Sikkim border. He camped on the shores of a large lake (not named) and the next day ascended a col which he named 'Koraydeu La' (possibly Chobuk Sang La, 18,077 ft on modern maps). They moved down the north side of the pass and set up camp on a glacier (probably the Yare Glacier), hoping to make an ascent of East or West Korayedeu (probably one of the peaks of the Kora Kang Range, Kora Kang I, 21,657 ft). However, the next morning, a storm broke and as the doctor could not afford the time to wait for an optimum weather window, the expedition made a rapid trek back to Darjeeling, ending his summer's adventures. Overall, the doctor was not pleased with his efforts during this most recent summer. It is unfortunate for us that Dr. Kellas did not spend more time in the mountains of north-central Sikkim and write about it in some detail; even today, it is a region rarely visited by climbers who are not from South Asia.

During the summers of 1913 and 1914, Kellas shifted his attention to the Western Himalaya; he trekked around Nanga Parbat and ventured into the Garhwal, although there is no written record of his

activities. Due to the Great War, his plans for additional expeditions were of course put on hold for the duration. It was not until the fall of 1920 that he made, with the now promoted Colonel Morshead, an attempt on Kamet from the east. In late August, the small expedition began working its way up the East Kamet Glacier, establishing four camps en route. The main thrust of the climb was the East Face—a mixture of rock and névé. Their highest camp was situated at 22,000 ft. The climbers were able to reach 23,600 ft before the porters decided that they had had enough. In addition, Morshead was not feeling well. After returning to the expedition's basecamp, Dr. Kellas still harbored hopes for a second attempt, but the porters were already heading down-valley towards their homes. Needless to say, there were no additional attempts on the big mountain.

However, the Kamet attempt also had a scientific aspect. Dr. Kellas was hoping to experiment with the use of supplemental oxygen. This was in preparation for the Mt. Everest reconnaissance expedition slated for the following summer. The doctor had also brought along a 'rubber bag' developed by a Professor Hill. Details on this rubber bag are wanting; we can only assume it was some type of portable hyperbaric chamber. The doctor's initial plan was to establish a high-elevation camp on a peak above their basecamp situated alongside the Raikana Glacier. With the early defection of the porters, this was not going to happen. Fortunately for the doctor, when the expedition moved down-valley and passed through 'civilized country,' he was able to hire some new men and establish a camp at 18,000 ft on the flanks of one of the spur ridges. He spent a week conducting various physiological tests and tested his oxygen apparatus.

By early winter of 1921, Dr. Kellas was back in Sikkim, with a foray onto the border with Nepal via the Kang La. In the spring of 1922, the energetic doctor made an attempt on Kabru (24,318 ft), a satellite peak of Kangchenjunga to the south. Shortly after, he returned to Darjeeling from the Kabru attempt; he joined the first Everest reconnaissance expedition led by Charles Granville Bruce.

Enroute to the big mountain, Kellas developed an unknown malady; he was so weak that he had to be carried on a stretcher. The fifty-three-year-old explorer and doctor died near the Tibetan village of Kampa Dzong. His grave is on a hillside above the village and has a fine view of the Himalaya to the west. Many Everest expeditions of the 1920s to the 1930s would pass by this spot and pay their respects to the man who had been one of the key figures in the development of high-altitude mountaineering. Several years earlier, he reported to friends that he was experiencing some auditory discomfort and he resigned his post at the Middlesex Hospital Medical School. Despite his seemly indefatigable energy, he

was suffering from some long-term medical issue(s) which appears to have gone undiagnosed or, if diagnosed, not revealed to his friends.

Dr. Kellas's legacy is considerable. He had given considerable thought regarding the impacts of reduced oxygen at or near the summit of Mt. Everest on a climber who was not using supplemental oxygen. In what notes and written material he left to posterity, he stressed the importance of acclimatization; a person can adapt to the impacts of reduced oxygen at high altitudes if they go about it in a methodical process. He estimated that 20,000 ft was the maximum altitude which a human could adapt to long-term acclimatization; above that, elevation acclimatization would only work in the short term. In his 1920 manuscript, he estimated the maximum rate at which oxygen could be used by the body and hence the maximum rate at which a climber could ascend. He also discussed a climber's diet at altitude; this was a result of his own extensive time spent at higher elevations. He felt that too much food was consumed from tin cans and too much of it was not heated. He strongly suggested that climbers incorporate as much fresh food as possible and by all means heat it as well.

The doctor's advice was not limited to physiology; due to the extensive time he spent in Sikkim and environs, he had considerable dealings with the local Sherpa community that was living in and around Darjeeling. In time, he became quite impressed with the mountain craft of the Sherpas—recommending that they be integrated into any expedition, including the 1921 Mt. Everest reconnaissance expedition.

Like Shipton, Tilman, and Smythe, the expeditions that Dr. Kellas organized were small affairs; although mountaineering and exploration were paramount, the hands-on part of surveying was not much of a concern to him. His temperament required him to always be on the move; in short, he did not have the patience to be a surveyor. In addition, most often he did not want to travel with a professional surveyor, probably because he did not want to be incumbered by all the necessary gear and slowed down by the time required to survey. I find it curious that he spent so much time trekking and climbing in the middle of the monsoon; I am not sure if that was due to constraints dictated by his teaching schedule back in England, or just because rain and snow did not bother him that much. In any case, I have to give him credit for being willing to prevail for weeks on end through a lot of rain and snowstorms.

He had tireless energy, which is evident as he crisscrossed the terrain in search of new climbing routes and untrodden passes. It is a shame that we don't have more written records of his adventures, but it is

possible that between his teaching duties at the university and travels during the summer months, he had little time and/or interest in writing a travelogue. His legacy was in the realm of physiology.

In the doctor's honor, members of the 1930 international Himalayan expedition, who climbed Jongsang Peak after their failed attempt on Kangchenjunga, named a nearby 21,916 ft mountain after him. It is located on the Sikkim-Tibet border north-northwest of Jongsang Peak, between the Lashar and South Lhonak glaciers. The doctor never made an attempt on this summit but did visit the col which lies between it and his beloved Jongsang Peak. Fortunately, the geographers with the Survey of India have seen fit to leave the name as it is. Although he never did make it to the Everest region, there is also a 23,222 ft summit just north of the East Rongbuk Glacier named 'Kellas Rock Peak' ('Laxin' is the alternative name).

Chapter 12

Dr. and Mrs. Workman, Part 1

The only Americans whose names are written in the annals of Karakoram-Himalaya surveying are the Workmans; to be more specific, William Hunter Workman and Fanny Bullock Workman. They organized nine expeditions over the course of eight summers to the Karakoram-Himalaya, spanning the years 1898 to 1912. Although there is no biography written about this extraordinary and controversial couple to date, they did leave behind a mountain of notebooks, photographs, and logs that a few historians have been able to mine for details. A short biography of Fanny does appear in a book by Thomas Pauly entitled *Game Faces* (2012), from which I have gleamed insight into her pre-exploration days. It will become apparent that the Workmans were combative and egocentric when it came to dealing with other explorers, but on the plus side, they were energetic and tenacious, two qualities that are well served in this line of work where the air is thin and the weather is extreme.

Let us digress a minute and consider why Americans were scarce in the early days of Karakoram-Himalaya exploration. Firstly, it took a lot of money in order to venture off into the unknowns for months at a time—it was a rich person's hobby or profession. Secondly, around 1900 there was little in the way of a mountaineering culture in the USA; it would develop over the first half of the 20th century, but when the Karakoram-Himalaya were first being explored, there was not much of a talent pool in the USA to draw from. Thirdly, the Karakoram-Himalaya were on the opposite side of the planet from America; it was a major undertaking just to get to the region—weeks of sailing in both directions.

Fanny was the daughter of the governor of Massachusetts and spent much of her formative years attending schools in Paris and Dresden. Both her father's and mother's sides of the family had money, plenty of it. This would be a major factor in her future endeavors. She spoke fluent French and German, which certainly helped when she went on the lecture circuit in Europe. Fanny was the dynamo of this couple; it would appear that the good doctor was along for the ride in many respects.

William was the son of a well-known doctor; he spent some time in school in Europe but then returned stateside to graduate from Yale and then from Harvard Medical School. Shortly after William completed medical school, the couple were married. The next eight years were spent in Worcester, MA, during which time they had a daughter (Rachel) and William worked in his own medical practice—life seemed well ordered for this upper-class family.

It was also during this period that both William's and Fanny's fathers died, and the couple inherited vast sums of money. If they did not waste away this money, they were set for life. However, this upper-class family were restless. In 1889, on the grounds of ill health, William closed his medical practice and the Workmans left America and relocated in Dresden, Germany. It would certainly appear that William's ill health was only an excuse to move to Europe so they could be closer to the action; as we will see shortly, his health certainly appeared to be in perfect order. Not long after their relocation to Dresden, a son, Siegfried, was added to the family roster.

Sometime around 1891, William and Fanny fell in love with bicycling; touring the countryside via bicycle was a new concept in Europe but it caught on in a big way. The Workmans had found their calling, or at least a new pastime which they would wholeheartedly embrace. The next summer, they cycled around Italy (the two children were left in Dresden in the care of a nurse), and Fanny found the time to climb Mt. Blanc with a guide leading the way. This seems to have been her first taste of mountaineering. During the summer of 1893, they were back on their bicycles touring the Italian countryside once again. Upon their return to Dresden, however, their son Siegfried died of pneumonia after a serious bout of influenza. During the next several summers, they toured Algeria and Spain with their daughter, Rachel. It was during this period that Fanny was able to summit the Matterhorn, although without William. Why the doctor did not climb at this stage we are not told.

With Rachel off to school, the couple set out for East Asia in 1897 in order to see the art and architecture of Buddhist, Hindu, and Muslim craftsmen. Trekking and climbing in the mountains of Asia was not on their radar at that time. Since they were keen cyclists, once they arrived in Asia they rode their bicycles as much as possible. They visited Indonesia, Indochina, Ceylon, and India. In order to avoid the heat of an Indian summer in 1898, they ventured northward into the Himalaya in search of cooler climes. They ended up trekking around Ladakh and western Sikkim, as will be explained below. At one point, they rode their bicycles from the southern tip of India into Kashmir. An account of this adventure appears in their book *Through Town and Jungle* (1904). Over the next fourteen years, it was typical for the Workmans to trek during the summer months and cycle in Asia or return to Europe during the winter months. It may be apparent to the reader at this stage that the Workmans seem to have led a near-idyllic lifestyle; there was no need to earn money. Their vocation was adventure, either on foot or on a bicycle.

The First Forays

We know from the introduction of their first mountaineering book, *In the Ice World of the Himalaya* (1900), that the Workmans had somehow developed over the previous several years a deep interest in surveying and exploration of the Karakoram and Himalaya, despite the fact that they had had absolutely no prior interest. How they developed this interest in mountain surveying is not clear from reading their account. Nevertheless, it subsequently became the focus of their lives for the next fourteen years.

As we have already seen in earlier chapters, at the turn of the 20th century, the existing maps of the region were either lacking in details or had considerable errors in the positions and heights of various topographic features; essentially, there were limitless opportunities for survey work and other scientific endeavors. As it turned out, Fanny was the first of only two women who played any significant role in the exploration of the Karakoram-Himalaya. The other woman was Jenny Visser (from Holland), who with her husband led multiple expeditions in the 1920s and early 1930s.

Since neither Fanny nor William had any big mountain experience at this early stage of their exploration careers, they wisely enlisted the Swiss guide Mattia Zurbriggen to act as climbing leader. The Workmans' daughter, Rachel, who was by this juncture in her mid-teens, was sent to boarding school; her name is never mentioned in connection with any of their mountain expeditions.

Early in the summer of 1898, they trekked from Srinagar to Leh on what became their first expedition; from Leh they moved up the Nubra Valley to the Kardong Pass (17,582 ft) and on to the Saser Pass (17,753 ft). They also ventured up the Kondus Valley for some distance before returning to Kashmir. On the way back to Kashmir, they opted for a less traveled route which took them near the twin-summited Nun (23,409 ft) and Kun (23,218 ft) in the Suru district. It was a good first trekking expedition for two Westerners with little prior mountain experience.

By September of that year, the Workmans had moved over to Darjeeling with the express interest of exploring Sikkim. The plan was to trek along the Singalila Ridge, climbing whatever summits they happened upon, and then to make their way east across Sikkim to the border with Bhutan. On this expedition, they hired the services of Zermatt guide Rudolf Taugwalder. They departed Darjeeling during the second week of October, after spending several frustrating weeks attempting to procure the services of porters as well as purchasing much-needed supplies. These difficulties were only a prelude to what was to come. They had trouble with the sirdar (leader of the porters) and the porters from the onset. Five days into the expedition, they knew that this arrangement was not going to work; they

turned around and headed back to Darjeeling. The Workmans vented their frustrations to the political agent in Darjeeling but he paid little interest to their complaints. In the end, they gave up trekking in Sikkim and departed the Indian subcontinent for the winter.

In the spring of 1899, William and Fanny were bicycling across the lush island of Java, but by June they were back in Srinagar organizing their second expedition into the Karakoram. Their objective on this venture was to trek to the Biafo Glacier, which would take about three to four weeks; once they had arrived, they would work their way up the glacier. Fortunately, they were able to retain the services of Zurbriggen as climbing guide. They opted for the most direct route to Skardu, that is to cross the Deosai Plain. Although warned in Srinagar that there might still be a considerable amount of snow on the plain, they only encountered countless shrieking marmots; the snow had long since melted.

From Skardu, they chose to follow the Shigar River northward and then over the Skoro La before the big descent to the village of Askole. On July 16, with fifty-five porters in support and two sheep acting as fresh meat on the hoof, the expedition headed for the Biafo Glacier.

The party worked its way up the right-hand lateral moraine for several days before moving towards the center line of the ice. Zurbriggen, who had been on the Biafo Glacier seven years earlier with Martin Conway, noted how much change had occurred on the glacier over the intervening years. The terminus had retreated to the north side of the Braldu Valley; the middle section of the ice was more heavily crevassed and broken than it had been. These obstacles impeded forward progress immensely; Zurbriggen had to chop steps in many sections in order for the porters to proceed around and over seracs.

Some of the passages through the seracs were so narrow that the porters had to remove their loads so they could squeeze through. The loads would then be tied to a rope and hauled along from above. What about the two sheep? The first one was tied to a rope and hauled through the passage in due course; the second one, however, slipped out of its rope harness and fell into a shallow crevasse. Zugbriggen and the shepherd were able to extract it; the animal was unhurt and lived until it was required to surrender its life for the dinner table. The porters quickly tired of this work even though the pay was good, and many started to grumble and threatened to return to their villages before the expedition was over.

Although upward progress was slow—due to the broken nature of the ice and the stormy weather—the scenery as they ascended, Fanny wrote, was “one of ever-increasing grandeur.”

Fortunately, they finally reached a section of the glacier which was less crevassed than the lower section, and hence the pace increased, at least when the snow was not too soft. At Ogre Camp (14,650 ft), so named by Conway because it is opposite the peak of the same name, the Workmans established a mini-basecamp from which they could explore the area. With a reduced number of porters and supplies, they pushed up towards Snow Lake. On the edge of this 4 by 6-mile plateau the snow was soft, so the pace of advance was painfully reduced back to a crawl.

At one point, Fanny slipped into a narrow crevasse up to her shoulders. After a lot of flailing and steady pulling on the rope by the Zurbriggen, she was hauled up to *terra firma*, and fortunately she was unhurt. They established another camp on the side of Snow Lake at 16,000 ft. Their cook celebrated this high point by serving fresh-roasted mutton for dinner. They had found a small bundle of wood left by the Conway expedition, which supplemented their own supply.

The next day, under a blue sky, they crossed the Hispar Pass (19,521 ft) and proceeded down the Hispar Glacier a short distance before returning to camp. The ideal weather did not last; by that evening, the wind increased and clouds obscured the sky. By morning, snow was falling, and they packed up and started back down the Biafo. The descent to Askole took half the time the ascent had.

After several days in Askole given over to organization, the expedition set out to explore the Skoro La Range some 8 miles to the south. They managed to climb a 18,600 ft peak (they named it 'Siegfriedhorn,' after their late son Siegfried) located above the Skoro La Glacier and then a few days later summited a 19,450 ft peak that they named 'Mt. Bullock Workman' (after Fanny Bullock Workman. Neither this peak nor Siegfriedhorn have retained those names). After this short flurry of climbing, they descended into the Shigar Valley. Their next objective was Mt. Koser Gunge (Khosar, 20,997 ft), which stood above the valley about 10 miles west-southwest of Askole. Under the expert guidance of Zurbriggen, they were able to reach the summit, but high winds and very cold temperatures did not allow for any celebratory photographs. Nevertheless, at 21,000 ft Fanny claimed to hold the altitude title for a woman. At this stage, William was around fifty-one years old and Fanny thirty-nine; even though they had a relatively late start to the world of exploration and mountaineering, as we will see, William's age did not slow them down—so much for his unhealthy constitution which was the reason he gave for relinquishing his medical practice.

Surveying in the Western Karakoram

By June of 1902, having commenced operations weeks earlier in Srinagar, the third Workman expedition was temporarily housed in Skardu. Their objective that summer was to explore and survey the Chogo Lungma Glacier (often spelled 'Chogolungma' (Chogo = 'large,' Lungma = 'valley') in the Western Karakoram—located west of the Hispar-Biafo glaciers and east of Haramosh. Accounts of their 1902 and 1903 expeditions can be found in *Ice-Bound Heights of the Mustagh* (1908). However, it had been a less than auspicious start to the expedition; Fanny had injured her right ankle while dismounting from her bicycle in Srinagar. When the expedition departed a week after the incident, she had to be carried in a litter. After several days, she was able to ride a pony for the duration of the trek to Skardu.

Now with Fanny's ankle nearly healed, the expedition pressed northward up the Shigar and then Basha River valleys towards the Chogolungma. Outside of the village of Basha, they noted a prominent peak (Mt. Ganchen, 21,197 ft) which they could not resist exploring from the outset. They spent several days on the flanks of Mt. Ganchen but decided not to attempt the summit as it was beyond their abilities. True to form, the Workmans had yet again employed the services of Zurbriggen as their climbing guide. He would often give or withhold his seal of approval to what should or should not be climbed. William and Fanny seem to have taken his recommendations seriously.

By the end of July 1902, all was set for the main event; with fifty-five porters, fifteen goats, and twelve sheep, the expedition moved out of the village of Arandu, located a stone's throw from the terminus of the Chogolungma Glacier. Over the next two weeks, this menagerie of climbers and animals worked its way up the length of the Chogolungma Glacier, ultimately establishing a camp in the upper basin at an elevation of nearly 19,000 ft. The glacier was estimated by the Workmans to be about 30 miles in length (currently it is around 29 miles) and is oriented southeast-to-northwest except for an approximate 2-mile section near the terminus, which is on a northeast-southwest axis. Its width ranges from 1–2 miles. When the Workmans revisited the glacier in 1903, they noticed that the lower sections of the glacier showed signs of significant thinning (it had only been a year, so how much could it have thinned?). The terminus also gave indications that it had retreated in recent years.

The upper basin contains two substantial peaks: the first is what the Workmans named 'Pyramid Peak' (Spantik, 23,054 ft); the second is the Indus Nagar Watershed Peak No. 2 (Malubiting, 24,452 ft, first ascent in 1971 by an Austrian expedition). From their camp in the upper basin, they managed to summit a small snow dome that was adjacent to it; they also hoped to reach the top of the ridge that

formed the watershed to the west, but a prolonged snowstorm put an end to that plan. After the storm, they decided to move back down the glacier several miles, with designs of working their way up the Haramosh Glacier. This is an 11-mile-long body of ice which is a significant western tributary of the Chogolungma. From where it flows into the Chogolungma, it is oriented towards the southwest before making a turn to the south. Its upper basin is located adjacent to the ridge which extends from Haramosh (24,307 ft), located to the northeast.

Trudging through deep snow, the climbers were able to ascend an obvious col above the head of the Haramosh Glacier. The col is positioned on a north-south ridge some 4 miles northeast of Haramosh; they determined the elevation via the barometer to be 17,412 ft and named this feature the 'Haramosh La' (16,830 ft). Through a break in the clouds, they were able to look down on the Mani Glacier to the west and the forested slopes of the lower valley beyond.

Ever on the move, after the short foray up the Haramosh Glacier the Workmans cast an eye on Basin Glacier, a smaller strip of ice just to the north of their camp. It forms a ramp to the southeast face of Spantik. They moved up through a heavily crevassed region before setting up their high camp. The next day, under the expert eye of Zurbriggen, they worked their way up a 2,000-ft-high ridge to the north, which was icy and fluted. They were aiming for a low spot on the ridge, which they ended up calling 'Bhayakara Col' (19,260 ft, Sanskrit for 'perilous'). They made it to the ridge, which turned out to be a knife-edge—not even wide enough to stand on and take in the view. Downclimbing was even more challenging and nerve-wracking than the ascent. They made it back to camp after a twelve-hour effort, and Zurbriggen commented that it was one of the hardest climbs of its kind that he had ever made.

There was yet one more tributary glacier that the party had not yet set foot on and hence was ripe for the picking. Due to three prominent medial moraines that were evident in late August—when they first viewed this body of ice—the Workmans named it 'Moraine Glacier' (the name has stuck). This glacier extends northward from the Chogolungma for several miles, then the first of three branches splits off to the east. A mile of so farther, the glacier splits again; this branch extends due west while the main ice stream continues to the northeast. This northeast branch itself splits into several short arms, which lie within an amphitheater surrounded by a host of 20,000 ft-plus peaks.

The climbers set up camp on a moraine in this northeastern arm. The next morning, they worked their way through an icefall, but as the thin veil of clouds turned into a thicker, menacing mass, and with snow starting to fall a short time later, they turned back for their high camp. That afternoon,

they decided to descend back to the Chogolungma. Once again, it was a wise decision, as the storm lasted for two days and deposited a deep mantle of snow. It was now September 1 and with the storms only becoming more frequent, they knew that their 1902 season of exploration was concluding. They had been able to accomplish some basic survey work—mainly recording elevations as they went, in addition to sketching in the surrounding terrain.

Off the Beaten Path

By May of 1903, the Workmans were back in the now very familiar surroundings of Srinagar, a town which they became quite fond of. Their objective for the upcoming season was a thorough investigation of the mountains and bodies of ice lying between the Biafo and Hispar glaciers to the north and the Chogolungma Glacier to the south (north of the village of Arandu). This strip of terrain is some 10–13 miles on edge and even today is home to a host of obscure glaciers and peaks. No big mountains are present there, just countless summits in the 17,000–20,000 ft range; in other words, a perfect region for a summer of exploration where few had trodden before.

The Workmans were not the only explorers on the move that summer. In June of 1903, the Norwegian Roald Amundsen and crew sailed from Oslo on the *Gjøa* intent on making through the much sought-after Northwest Passage. Three years later, he was able to announce that he had successfully navigated the ice-choked link between the Atlantic and Pacific oceans.

Like on all of their expeditions, the Workmans were able to secure the climbing services of professionals; in this case, the Italians Joseph Petigax, Ceypien Savoye, and Laurent Petigex. Joseph Petigax had been on a number of Duke of Abruzzi expeditions, and while this was to be Savoye's first outing with the Workmans, it was not his last. He would faithfully guide them over hill and dale, through good times and bad times on their 1908 and 1912 Karakoram expeditions. They also procured—a first for the Workmans—the services of a professional surveyor, a Brit simply known as 'Mr. Hewett.'

By the third week of June, the expedition had made its way to the Braldu Valley and was at the entrance of the Hoh Lungma Valley. The valley extends due north and is not a place of beauty; in fact, Fanny Workman referred to it as "the acme of desolation." They proceeded to the terminus of the Hoh Lungma Glacier ('Hoh Lumba' is their spelling), which they found interesting from a geological perspective. In front of the glacier was the largest terminal moraine that they had ever laid eyes on: it was estimated to be 500 ft high, a half-mile in width, and about the same in depth. There were a series

of more recent recessional moraines between it and the terminus of the ice. The large moraine had to be fairly old, as it sprouted a number of well-established cedar trees. (Using satellite imagery, the current terminus is a mile and a quarter from the oldest terminal moraine. Since it was already back some half-mile during the Workmans' 1903 visit, it has receded another half to three quarters of a mile since. On the west side of the valley, trimlines located hundreds of feet above the present level of the ice are also clearly evident, testifying that the ice has diminished greatly since its heyday.)

After a short trek up the ice above the terminus, the Workmans discovered that the map (Survey of India) they were using was quite inaccurate. The map indicated one main glacier but what they saw in front of them was a confluence of a handful of ice streams. The western stream, which is the Hoh Lungma Glacier, is joined by two substantial tributaries just up from its terminus: the Chongahanmung and Tsilba (their modern names). The northern ice stream consists of the Sosbun Glacier, which after 3 miles splits into the North and South Sosbun glaciers. The expedition trekked up the Sosbun and then, when it split, they bore to the left (west) on the North Sosbun Glacier. To add even more confusion to an already muddled picture, in the Workmans' narrative and on their map, they referred to the South Sosbun as the 'Hoh Lumba Glacier.'

The upper North Sosbun Basin is surrounded by countless granite spires and needles that reminded the couple of the area around Mt. Blanc. They eyed a low spot on the col at the head of the basin, which now became their immediate objective. After a six-hour early morning climb, they reached the crest of the ridge at the col and looked over what they claimed was the Hispar Glacier to the east.

The ridge was heavily corniced, so they one by one moved out onto the lip of the cornice while being belayed from below; they could peer down some 4,000 ft to an unknown glacier to the north, which they ended up calling 'Cornice Glacier.' In tribute to their guides, they called this pass the 'Petigax Savoie Col' (~17,000 ft, not labeled on modern maps. It is just east of a peak called 'Sokha Brakk,' 19,875 ft).

From this vantage point, the Workmans could not see the outlet of Cornice Glacier to the northwest, hence they speculated, "If it has an outlet on any large glacier it would be on the Hispar, east of the Alchori Glacier" (*Ice-Bound Heights of the Muztagh*, p.232). After they had returned to Europe and published their map, they chose to show the Cornice Glacier entirely surrounded by mountains; in other words, there was no outlet. They went as far as to defend this assumption in public debate to absurd levels. Today, Cornice Glacier is known as the Sokha Glacier and it was traversed from east to west in 1937 by Bill Tilman and two Sherpas. Tilman was disappointed when they found the terminus of

the glacier in the Berelter Valley; he was hoping that it was a unique glacier, one that was hemmed in by the mountains. It is unclear what made the Workmans change their minds—from possibly flowing into the Hispar as they stated in their narrative, to declaring later that it definitely had no outlet.

In actuality, as Tilman found, the Sokha Glacier is joined by the Solu Glacier to the northeast, before it flows down into the Berelter Valley in the west. From Petigax Savoie Col, the Workmans would have looked to the northwest and seen that the ice descended around the corner of a protruding ridge, but they would not have been able to see the terminus. Obviously, it was in unbelievably bad form on their part to insist (argue) on a certain geographical point when they had not been able to thoroughly explore it. It is hard to know why they defended this notion of an isolated glacier with such vigor. It is possible that once it was questioned by Conway, who had been the first European to make the Hispar-Biafo traverse, that they could not recant even if they harbored any doubts regarding the veracity of their claim. I can only speculate that they held this view for so many years because of their hubris. The other unanswered question regarding Cornice Glacier is, what role if any did Mr. Hewitt's survey play? More on this later.

After their ascent to Petigax Savoie Col, the party moved back down the glacier and took the tributary to the west, the South Sosbun Glacier, which they followed to its head. Here they also made an ascent to a low spot on the ridge they named 'Col Des Aiguilles' (18,351 ft, Needle Col, in tribute to all of the rock spires and needles in the area). From there, they could look down on Cornice Glacier once again. This slightly new perspective did not clear up their confusion with regard to an outlet. Due to continued stormy weather, they departed the Hoh Lungma Glacier system and headed back to the Chogolungma Glacier via the same route they had used on the approach. They hoped to continue to explore the upper Chogolungma Basin in order to finish the survey work they had started the previous summer (1902) and climb any peaks that struck their fancy.

With these objectives in mind, the Workmans rushed the expedition through the villages located in the Basha Valley with a sense of urgency. However, it took nearly a week to get organized once they had arrived at Arnado, the last village near the terminus of the Chogolungma Glacier. By mid-July, the revitalized expedition pushed up the glacier. There was a noticeable difference from the previous summer; there was significantly more snow on the lower and middle glacier, testament to a snowy winter and spring. They pushed upwards, finally establishing their basecamp at a spot dubbed the 'Riffle' because it was located beneath a rock feature, which they called the 'Rifflehorn.' It was located at the confluence of the Haramosh, Basin and Moraine glaciers. The weather had been stormy on the trek up

the glacier, precipitation taking the form of rain; they could only hope for some improvement. Hope was not enough—the storms continued, in fact for nine more days. This period of inclement weather was not confined to the Western Karakoram; in late July Kashmir was hit by a heavy rain, resulting in severe flooding in Srinagar.

Once the stormy weather had abated, the climbers donned snowshoes and proceeded into the upper basin of the Chogolungma in order to explore the three small glacial arms that flow in from the south. They ascended part of the easternmost arm (what they called 'Crevasse Glacier'); at the head of this little basin they eyed a most-inviting col, but the soft snow limited their movements, and in the end they aborted any attempt to reach it. They returned to their Riffle Basecamp, at which they were to remain for the next ten days because of a combination of poor weather and the fact that they had to wait for a large shipment of atta to be sent up the glacier. Atta was the staple of the porters—if they did not have their own food, the expedition ground to a halt.

Once the weather had cleared yet again, the Workmans decided to attempt to climb the highest of three peaks that loomed over the upper Chogolungma Basin, Spantik. They estimated its elevation at 24,500 ft, which is well above the modern measurement of 23,054 ft. How they came up with that value is not clear; see the discussion at the end of this chapter for some of my thoughts on this subject.

As viewed on a map, Basin Glacier looks like it might prove the most direct approach to Spantik. Although they had first ventured onto Basin Glacier the previous summer, and hence had some idea of its nature, they decided to give this route a chance. However, it became readily apparent once they had ascended into the upper reaches of the glacier that the ice was too broken up and too steep for their level of mountaineering experience. Consequently, the summit attempted was temporarily abandoned and the expedition returned to the upper Chogolungma Glacier Basin. They did establish a new camp at 19,350 ft near the base of a ridge which extended some 4 miles from Spantik towards the southeast. From there, they would commence their attempt on the summit.

On the morning of their summit attempt on Spantik, they worked their way up the Southeast Ridge. Enroute, they climbed a 21,300 ft snow dome which they had viewed from their camp; they decided to call this feature Mt. Chogo. Looking to the north, they could see a plateau above which loomed over Spantik, to the right-hand side and closer to their position was a smaller summit they dubbed 'Mt. Lungma.' Since it was still early in the morning, about 8 a.m., they continued towards Spantik. Once they had traversed the snow plateau, the climbers stopped to discuss their options. They

came to the consensus that Dr. Workman and two guides would continue the attempt on Spantik while Fanny and one of the guides would redirect their efforts to Mt. Lungma. She and the guide reached the summit around 10.30 a.m. Fanny unpacked the barometer and estimated the height at 22,568 ft. Her measured elevation was probably too high by at least 1,000 ft, possibly more. It is hard to determine from modern imagery and maps where this summit is, but the most obvious point would put her around 20,700 ft.

Meanwhile, the two guides and doctor continued to push up the south spur of Spantik; after some hours transpired and the party was still well below the summit, they knew that the top was out of reach. William unpacked his barometers and measured the elevation—he obtained a value of 23,394 ft. Not surprisingly, this value was far too high, as the accepted value today of the summit is 23,054 ft. How high they were is hard to tell, but probably around 22,000 ft. It was a blue-sky day and after all the stormy weather they had endured of late, they could appreciate the view even more. It is an understatement to say that the view was immense; a sea of snow-covered peaks dotted the horizon in nearly all directions. From Nanga Parbat 60 miles to the southeast over to Masherbrum, Golden Throne, and K2 some 90 miles to the northeast. The descent was long but was executed without incident. It had been a sixteen-hour day but they felt that it had been well worth the effort.

It was now mid-August and the expedition season would be winding down over the next several weeks; therefore, they decided to venture up the 6-mile-long Bolucho Glacier with the entire expedition, and then attempted to cross over to the Kero Lungma Glacier. The Bolucho Glacier had been a northern tributary of the Chogolungma and is located roughly halfway up from the terminus. By 1903, the terminus had receded about half a mile from the side of the Chogolungma Glacier; the vacated land was a jumble of moraines and rocks of all sizes, which took some time to navigate through and around. The next day, they made good time up the glacier and were at the base of the next pass early enough in order to cross that same day. Although the route looked quite difficult from below, it had been reconnoitered by the guides the previous day and it turned out Bolucho Pass (17,021 ft) was easy to access, at least from the south.

At the pass itself, a large cornice barred movement to the north side, hence the guides excavated a tunnel through it in order for the porters to pass with their loads. The north side was considerably steeper and required some care on the descent. Four of the first five porters to start the descent lost their footing and slid down the 1,000 ft slope out of control. Fortunately, the snow was soft and they emerged at the bottom unhurt. However, the remaining porters were now spooked by what

they had witnessed and refused to continue. After some three hours of negotiations and promised baksheesh (extra pay), the porters moved down the north side, but only after the guides had tromped a zigzagging path through the snow. The goats and sheep made it over the Bolucho Pass without incident.

The expedition was now on an arm of the Kero Lungma Glacier, which they descended the next day. With yet more unexplored terrain to the north and east, the party spent several days exploring the Hucho Alchori Glacier system, whose northern wall forms the southern wall of the Hispar Glacier. They ascended to the upper basin and were able to reach the low spot on the highly corniced ridge; they gave this feature the name of 'Alchori Col' (17,622 ft). It was a sheer drop down to the Hispar. As they would learn some years later, while they trekked up the Hispar Glacier, this southern wall contained only a few mountaineering passes over its 30-mile-plus length. One important point the Workmans learned from their travels in the region over the previous two summers was that the south side approaches to any of the cols near or on the Hispar-Biafo south wall were relatively easy compared to the vertical terrain found on the north side.

As they descended the Hocho Alchori Glacier, the Workmans proposed to the leader of the porters that they proceed back up the Kero Lungma Glacier to its head and exit via the Nushik La. They would then descend the Haigutum Glacier to the Hispar and then down the Hispar Glacier to the villages of Nagar (recall that the Conway expedition had used this pass). The Balti porters would have no part of this ambitious plan, even when the promised pay was raised to four times the going rate. Nagar in Hunza was like another planet for these villagers; they had heard about it, but not in a good way. In decades past, a group of men from Nagar had crossed the range (Hispar-Biafo) and raided the villages in the Braldu Valley. The refusal of the porters to travel to Hunza was an indication that the expedition had run its course; accordingly, Fanny and William called a halt to any further exploration.

The couple returned to Europe for a time, cycling of course when time permitted, but also launching out onto the lecture circuit of Western Europe. At this juncture in their careers as mountain explorers, they started to receive recognition of their survey work in the Western Karakoram by several illustrious geographic societies. In their book *Ice-Bound Heights of the Mustagh*, the Workmans added a map of this part of the Karakoram which was a product of their 1899, 1902, and 1903 expeditions. The vexing question that arises at this time is why were their measurements of elevation, particularly in the upper Chogolungma Basin, so wide of the mark?

The elevations that the Workmans were measuring with their barometers were on the order of 1,000–2,000 ft too high. Fortunately, this was limited to the few summits they climbed or high points they managed to reach; these inaccuracies were by no means universal. If their barometers were in error that is one thing, but recall that a Mr. Hewitt was a member of the 1903 expedition, and he was a professional surveyor. He would have surveyed Spantik (Pyramid Peak), so why weren't the Workmans' *in situ* estimates compared with his? We do know that he often formed his own team—in other words, he did not join the Workmans on their climbs—and it is not clear from the narrative how far and wide he ranged that season. The Workmans took multiple barometers on their expeditions; whether they used more than one for any given measurement is not stated—in other words, we don't know if they used two barometers and then cross-checked or took an average of the two values. Hewitt did not have any power over what the Workmans were doing regarding surveying.

At the conclusion of the expedition, Hewitt composed his own map, which would have been a revision of the Survey of India's pre-existing map. At that time, he would have noticed any discrepancy between his own theodolite measurements of Spantik and the Workmans' values. In addition, if he had been working on the ridge looking down on the Cornice Glacier, no doubt he would have had something to say about it having an outlet or not. I suspect, and it is only an educated guess, that since the Workmans had the final say in expedition matters, that after the expedition had returned home and they were working through their data and on the final version of the map, they probably used their own measurements and threw out Hewitt's numbers if they did not agree. The map they published with their narrative clearly shows the height of Pyramid Peak as 24,500 ft and Mt. Lungma as 22,668 ft. Most of the other topographic features on the map fortunately are quite accurate.

We are left to conclude that the main issue here was not so much that the Workmans were amateur surveyors, which they were, but rather that for whatever reason(s), they could not come to the realization that they could ever be in error with any of their work. If there was an error or discrepancy, it was someone else's fault, not theirs. This character flaw haunted them throughout their careers as mountain explorers. What is of interest is that Chapter 15 in *Ice-Bound Heights of the Muztagh* is dedicated to the topic of the trials and tribulations of measuring given heights with barometers. The Workmans took great pains to carry multiple barometers and to have them calibrated prior to and after their expeditions; however, it would appear that despite a theoretical knowledge of the possible errors of measurement, they did not consider that their own measurements could be so inaccurate.

Chapter 13

Workmans, Part 2

Mountaineering and Surveying

Back in the summer of 1898, the Workmans, on their return to Kashmir from Ladakh at the conclusion of their first expedition, had nearly circumambulated the tallest collection of peaks in the Pir Panjal Range, called 'Nun Kun.' That encounter had ignited a slow-burning fire in their souls to climb these two peaks, so by 1906 they were back in northern India, set to do just that. These mountains, which are located in northern Zanskar, lie roughly on an east-west line between Srinagar and Leh, slightly closer to Srinagar. There are two principal summits, the highest being Nun (23,409 ft) and then Kun (23,218 ft); they are separated by a glaciated plateau measuring 3 ½ miles by 1 ½ miles. There are a handful of subsidiary peaks; the most notable is Pinnacle Peak (22,736 ft).

Prior to the Workmans' visit, in 1898 a young Lieutenant Charles Granville Bruce and a Major Lucas of the Indian Army took sixteen Gurkha soldiers there for some training in mountain craft, although they never made a summit attempt. In 1902, Dr. Neve—accompanied by a Reverend Barton—trekked up the Shafat Glacier on the east side of the massif; Neve visited it again in 1904 and drew a credible sketch map of the area. The glaciated plateau that separates Nun from Kun was first reached and photographed in 1905 by a Dr. Sillem, a Dutch climber. The adventurous Dr. Neve ventured back for a third visit in 1910 and managed to climb a satellite peak to the west of Nun.

In the Workmans' written account of their expedition, *Peaks and Glaciers of Nun Kun* (1909), they noted that on their previous expeditions they had experienced, to put it mildly, considerable trouble from porters who were required to carry loads to higher elevations. In order to circumvent this problem, they had their trusted Italian guide, Savoye—who lived at the base of Mt. Blanc—recruit six Italian guides-in-training, who in turn would act as high-altitude porters.

However, there was a serious problem from the outset of the 1906 venture; all grains and many other types of foodstuffs, including all the food for the local porters, had to be transported from one of the large cities of the Northwest Frontier to the base of the mountain. As it turned out, there had been widespread crop failure for two consecutive summers, and hence local villagers could not be depended on to sell their meager supply to outsiders.

Undaunted, the Workmans found a solution: some 243 porters set out from Islamabad as an advance guard weeks before the main body of the expedition in order to develop a stockpile of food at the base of the mountain. Even though this was a viable solution, additional trouble was not far behind. Six days into their march from Islamabad, approximately 150 porters deserted with their loads. Nothing could be done except to have the remaining porters carry onwards to the mountain and hope the loss could be made up for. Two weeks later, the main body of the expedition left Srinagar with twenty-five additional pony loads of food and equipment. The approach march was fraught with trouble, not only with the porters, but there were several dangerous river crossings that had to be made as well. Persistence paid off and the expedition was able to reach the base of the mountain with a sizeable supply of food.

The Workmans decided to approach the mountain from the northeast (Rangdum Valley), working their way up the Shafat Glacier. A basecamp (Moraine Camp) was established at the terminus of the glacier and hence they were finally able to come to grips with the mountain after the turmoil of the approach march. The expedition then ventured onto the upper Shafat Glacier and then onto a small unnamed glacier lying to the west, which they christened the 'Fariabad Glacier.' The Shafat Glacier, between 16,000–18,500 ft, was covered with nieve penitente up to 3 ft high in places.

Over the next week, there was a slow build-up of camps and supplies as the guides pushed the route up towards the Snow Plateau. Two camps were established on the plateau itself. From the first camp, which they called 'Italia,' the view of the North Face of Nun was not promising, at least for an ascent, so both the guides and the Workmans decided that they were not up for that severe of a challenge. The next day, they moved camp farther to the northeast, which put them at the base of Kun; this spot on the snow was dubbed 'Camp America' (21,300 ft). After a sleepless night, with seemingly everyone impacted by the elevation, Fanny and William headed upwards with their three guides. They climbed a rock arête that stood above the plateau, which they named 'Pinnacle Peak.' They measured the elevation at the summit as 23,300 ft (based on their boiling point thermometer). From their perspective, it appeared that they were on the second-highest summit of the group, with only Nun standing higher. When they wrote the book about this expedition, they claimed that their elevation measurements were more accurate than what was portrayed on the official Survey of India map.

It was revealed in 1920 by Kenneth Mason, of the Survey of India (*Geographical Journal*, Vol.56, No.2, p.124), that the Workmans' assertions of the height of Pinnacle Peak were quite incorrect. This is worth mentioning, because in the ensuing years there was considerable 'debate' in various geographical

journals and in lectures, regarding this and several other 'corrections' to the existing map that the Workmans promoted. The elevation of Pinnacle Peak was listed on the Survey of India map—which the Workmans had in their possession when they climbed it—as 22,810 ft. This was determined by a survey conducted from lower elevations, of course using a theodolite. Fanny claimed that her *in situ* measurement was more accurate than what the map proclaimed. The Nun Kun Range was re-surveyed in 1911, with the result that Pinnacle Peak was assigned an elevation of 22,742 ft (22,736 ft being the most up-to-date value), more than 450 ft lower than Kun and more than 600 ft lower than Nun. Despite the controversy regarding the actual height, the climb was still a significant accomplishment for the Workmans. It would be the highest elevation that Fanny ever reached and most likely the highest for William, depending on how high his actual turn around point was on Spantik.

After the climb of Pinnacle Peak, there was no thought of attempting Kun, as it was also deemed too steep for this party to even attempt. The climbers and porters spent the next several days descending the same route they had used on the ascent; the expedition ended up back at basecamp. (Kun was first summited in 1913 via the northwest ridge by the Italian M. Piacenza. However, Nun would not be trodden on until 1953, when an international expedition led by B. Pierre and P. Vittoz climbed the West Ridge.)

During the three days the Workmans spent at basecamp, they developed a revised exit strategy. Since the main objective of the expedition had been to reach the Snow Plateau and then attempt either summit, they needed to come up with a new game plan. Instead of retracing their steps through the Rangdum Valley, they would strike out to the southwest and make a circuit around the peak. On August 9, the climbers, fifty porters (the gear had supposedly been pared down!), four sheep, and a few additional camp staff headed back up the Shafat Glacier, which at this point in time was well-known ground. It was mid-summer, so the surface of the glacier had undergone significant changes since their first foray three weeks' previous. Two miles above basecamp, one of the sheep took a misstep, with the result that it plunged into a crevasse; it was seen no more. Shortly thereafter, one of the remaining three sheep got away from the shepherd and made its run for freedom. No one made an effort to retrieve it.

At the top of the Shafat Glacier, they crossed over to the north-south-oriented Fariabad Glacier, but after a short descent on the ice, they were forced onto a steep and broken rock spur which lay along its side. They continued the descent without further incidence, reaching the terminus of the Z1 Glacier (20,505 ft) that afternoon; they set up camp a mile downstream of the glacier. (Z1 is the name of a

subsidiary peak to the south-southeast of Nun.) The next two days, they followed a narrow valley towards the northwest, and then ascended a short unnamed glacier. Near the head of this glacier was Barmal La (on the Workmans' map 17,228 ft, but probably closer to 16,700 ft), which several of the porters recognized, having seen it from the north on previous expeditions. They established a camp at Barmal La; this put them due west of Nun and just off the southern margin of the Barmal Glacier. This body of ice flows westwards for about 10 miles.

From the pass, they made a day climb to a 19,080 ft peak which towered over the northeast corner of the Barmal Glacier. They gave this mountain the honorific title of 'Nieve Penitent Peak' due to all the nieve penitent that pockmarked the summit area. At one point on the climb, they claimed to have ascended a 70^{o} ice slope, which seems dubious since they were wearing hobnail boots. They possessed ten-point crampons but did without them because of the weight (they either left them at basecamp or at their highest camp). Hence moving up a 70^{o} ice slope even when steps had been cut would have been possible, but a real challenge.

The view from the summit was expansive, as the sky was devoid of clouds. Just to the north was an even higher summit, which the Survey of India map labeled as 'D41,' and which they determined to climb the following day. After a five-hour effort the next morning, the climbers scrambled onto the small shale-covered summit of D41 (20,571 ft).

It was now mid-August and time was starting to be a factor; so, the following morning, camp at Barmal La was struck and the expedition moved north across the upper Barmal Glacier to Sentik La (~16,500 ft). To the north of this pass was the small Sentik Glacier; its terminus lies in a steep canyon which the expedition used as a corridor to descend into the Suru River Valley. They arrived back (minus the sheep) at the river the following afternoon without mishap; the circuit around the Nun Kun Massif had been completed.

In their book describing this expedition, the Workmans included a map which was based on the latest Survey of India edition, but with their own corrections/additions. In one of the last chapters of their book, they justify why they made the changes they did. As noted above regarding the elevation of Pinnacle Peak, it is not so much that they questioned certain aspects of the Survey of India map—it certainly was not perfect—it is how they went about it. A given amount of tact would have gone a long way in this case, but tact was not one of the qualities that either Fanny or William seemed to possess. A large part of their problem is that they spent a considerable amount of ink in this particular book

negating other explorers' claims and proclaiming their own. On this expedition, they did not take along a professional surveyor, which meant that they made their own measurements and observations which were, as noted, lacking in accuracy.

Summer 1908: The Snowy Hispar Glacier

After a two-year hiatus from the Karakoram-Himalaya, the Workmans were itching for another extended period in the mountains. Their objective this time was a thorough survey of the Hispar Glacier in Hunza and to climb any col or peak in the vicinity of the glacier which would allow them a better vantage point for their survey work. They also hoped to descend via the Biafo Glacier even though they had ascended its entire length in 1899. The Workmans had a limited aerial view of the upper reaches of the Hispar Glacier in 1903 when they looked down on it from the ridge separating it from the Kero Lungma Glacier to the south. They of course viewed a small portion of the upper Hispar from ground level in 1899 when they had reached the Hispar Pass.

As we saw in chapter six, the 1892 expedition of Sir Martin Conway traveled the length of the Hispar Glacier to the pass of the same name and then descended via the Biafo Glacier. Although the Workmans' expedition was not for the most part going to be moving over virgin ground, and despite Conway's effort to improve the existing map, there was still plenty of survey work that needed to be done, especially concerning the many tributary glaciers and surrounding peaks to the north.

Since the survey was the primary objective, a project which the Workmans were taking very seriously—as opposed to wandering around the mountains as amateur surveyors—they were able to secure two professional French surveyors: Drs. Calciati and Koncza; the former was a count. These gentlemen often worked as a semi-independent party from the main body of the expedition, which gave them the greater freedom of movement that their work required. The Workmans were also able to enlist the climbing expertise of Ceypien Savoye and three of the Italian junior guides that had shared in their 1906 Nun Kun adventure.

There is no need to cover the approach march, only to say that by May the expedition was making its way to Gilgit from Srinagar. On the Gilgit to Nagar leg, the heat and sandflies took their toll on the European members of the expedition. This was compounded by the fact that nearly all the local springs were contaminated with sulfur salts, which made the water (and tea) just about undrinkable to a Western palette. The expedition soldiered onwards, thinking of happier days to come. After

negotiations with the Mir of Nagar, the Workmans were able to purchase forty sheep and 10,800 lbs of atta; most of the latter was to feed the porters during the following weeks.

The lower route up the Hispar was along the right ice edge (south), similar to Conway's track. Most of the first three days were spent off the ice and on the slopes of the adjacent mountainside. The porters were in revolt during this period until word from the Mir of Nagar came back to them that they had better mend their ways or else … The expedition had little trouble with strikes and mutinies for several weeks, but as we shall see, more trouble with the hired help lay ahead.

At the junction of the Haigatum Glacier with the Hispar Glacier, in a spot just off the ice, they found the remnants of stone huts situated amidst small fields of grass. Like the Conway expedition sixteen years previous, the Workmans and their guides made their way up the Haigatum Glacier in order to have a closer look at the Nushik La. This pass is the only practical link with the terrain to the south, although it is no trivial trek. The Workmans, on their 1903 expedition, had contemplated traversing this same pass from the southwest side (upper Kero Lungma Glacier); recall that their attempt never came to fruition as their porters would not follow.

The route up the steep wall which led to the pass, after an inspection by the guides, was deemed as far too dangerous. Massive cornices protected the pass from any Sunday afternoon trespassers. They opted for a route slightly to the east, which if climbable would put the party on the highest point of the ridge on which the pass was located. At 2 a.m. the next morning, with illumination from candle lanterns, a party of six climbers set out for the top of the ridge. Savoye led a circuitous route through the myriad of seracs and crevasses, gaining the ridge by mid-morning. The apex of the ridge was a bit higher, so Savoye soloed along it for a reconnaissance. He climbed within 12 ft of the top, but he deemed the cornice too difficult to surmount. The altitude was around 19,000 ft; the Workmans dubbed this feature 'Triple Cornice Peak' as a tribute to the many cornices they had encountered on the ascent. The climbers retraced their steps and returned to the main body of the expedition located on the Hispar Glacier.

With regard to the topography of the Hispar-Biafo basins, on the south side starting roughly from the mid-point of the Hispar Glacier (15 miles from the terminus just south of where the Haigatum Glacier enters the Hispar), extending up to Hispar Pass and then down the south side of the Biafo Glacier, is a nearly continuous wall of mountains that range in height from 18,000–20,000 ft; the Workmans referred to it as the 'Great South Ice-Wall' (the section adjacent to the Biafo has been

referred to by later mountaineers as the 'West Biafo Wall Peaks'). There are several good photos of it in their book. In places, the crest of this wall is several miles back from the edge of the ice, but at other points the ridge directly towers over either of the two glaciers. The only 'reasonable' pass through this barrier is the Sokha La, located on the upper Biafo and first traversed in 1937 by Tilman and his Sherpa companions.

The north side of the Hispar is less confined; in other words, several large tributary glaciers and an assortment of higher peaks (22,000–25,000 ft) lie 5 to 10 miles back (north) from the Hispar itself. To the northeast of Hispar Pass lies the ice plateau known as 'Snow Lake,' which the Workman expeditions of 1899 and 1903 had reached the edge of but did not explore.

After the climb of Triple Cornice Peak and the descent of the Haigatum Glacier, the expedition sallied across the width of the Hispar and made for the confluence of the Jutmaru (Yutmaru) Glacier. This diagonal crossing (towards the NE) took several hours and involved the ascent and descent of a handful of medial moraines; some of them several hundred feet in height. As their next objective was to explore the upper Jutmaru, the Workmans sent the bulk of the expedition supplies and personnel up the north side of the Hispar while a 'pared down' party consisting of the four Italian guides, twenty-two porters, plus the Workmans ventured to higher ground. So much for a small exploratory party!

A nasty descent via a steep and unconsolidated lateral moraine provided access onto the ice from their camp. The surface of the Jutmaru was "dotted for miles with countless thousands of glacier-tables, the tops of which consisted of granite boulders." A little farther up, they encountered fields of nieve penitente with water filling the intervening depressions. Six and a half miles from the confluence with the Hispar, the Jutmaru bifurcates; the northwest arm extends a farther 2 ½ miles to the base of an unnamed satellite peak (23,966 ft) of Kunyang Chhish (25,761 ft). The second arm runs northeast and then north for a short 2 miles before it splits into two arms, each about 1 ½ miles in length. The party camped at the first bifurcation, and the next morning the climbers made a brief excursion up the north-northeast arm. They were hoping to climb a small peak or ridge in order to secure a view for the survey work but to no avail—the terrain was just too steep and too corniced for their liking. They only spent three days on the Jutmaru before returning to the Hispar. (The first ascent of Kunyang Chhish was by a Polish team that ascended the South Ridge in 1971.)

Desirous of spending more time on this part of the glacier, basecamp was established just off the ice on the north side, about a mile upstream of the confluence of Kanibasar Glacier (today known as

the ‘Khani Basa Glacier’) with the Hispar. They would use this camp, which they called ‘Lower Basecamp’ (15,850 ft), for the next two weeks. Up to this point, the weather had been ideal—clear skies, modest air temperatures, and little wind to contend with. It was not to last.

The next day, the Workmans and guides commenced the exploration of the Kanibasar Glacier. Very wet snow, as well as a turn in the weather, made for a less than perfect ascent of the glacier. After a miserable first night and with warm temperatures the next morning, the Workmans decided to head back to Lower Basecamp and await improved conditions. It had been the correct call, as intermittent stormy weather was the norm for the following nine days. They made some local excursions from basecamp to pass the time but did not find anything noteworthy.

Ten days after descending the Kanibasar Glacier, the expedition headed back up for a second look. The upper basin is guarded by Kanjut Sar I (25,459 ft, first ascent in 1959 by Italians) and its satellite peaks. To their disillusionment, William and Fanny once again found that there was no easy or even moderate col to ascend or peak to climb in this district. Thwarted from gaining serious elevation, they next turned their attention to an unnamed tributary glacier that branches off to the east from the Kanibasar, about 2 miles north of the Hispar (East Khani Basa Glacier). There were several impressive rock spires located at the head of this basin, but once again the terrain would only yield to a serious mountaineering party; hence the expedition beat a retreat to its basecamp.

It should be noted that at this time the survey party was operating independently from the main body of the expedition. Over the course of the expedition, Drs. Calciati and Koncza ventured up all the major glacier tributaries that the Workmans ventured, and a few more. As the reader may have noticed, the Workmans carried on their own survey work independent of the two professionals.

The expedition now moved 5 miles along the north side of the Hispar and established another basecamp—this one they christened ‘Upper Basecamp’ (15,900 ft). They were now about 4 miles from Hispar Pass. The Workmans had eyed a fine-looking pyramid-shaped peak to the northeast of Upper Basecamp which they deemed was ripe for climbing (there are several photos of it in their book). In a moment of non-creativity, the Workmans named this peak ‘Biafo-Hispar Watershed Peak’ (21,350 ft), as it stood some 3 miles north of the Hispar Pass, on the divide of the two watersheds.

The climbers and twenty of the porters left Upper Basecamp the next morning for the attempt. They had to put in a long day in order to reach the base of their peak, which they approached from the southeast; the route led through an icefall. Although it looked dangerous, the icefall was successfully

navigated without undue problems. Later, however, the porters had to be pushed and cajoled in order to keep them moving. At the base of the final steep slope leading up to a plateau from which a camp was to be established, the porters put down their loads and refused to continue. Their 'leader' attempted to get them restarted but to no avail. Savoye, the head Italian guide, who had been well out in front of the porters, retraced his steps to see if he could get them moving again. The Italian got into a heated discussion with several of the porters. Out of nowhere, three of the porters came at him with their walking sticks. Savoye was at the time holding on to his ice axe, and during the provocation he hit one of the porters with the shaft of this axe across the man's back; the porter went down in a heap. As soon as it had started, it was over. The arguing stopped and the remaining porters picked up their loads and continued the ascent to the plateau. The Workmans, who were on top of the slope when this occurred, noted in their telling of this unfortunate event that the porters understood this display of force, or as they put it, "winning respect for the authority shown."

Camp was established at 19,100 ft on the plateau directly beneath the highly fluted east face of B-H Watershed Peak. After a quick reconnaissance of the northeast side, Savoye dismissed any thoughts of climbing the northeast ridge; it appeared to his skilled eyes to be too narrow and too fluted for this party. The die was cast the next morning for the Southeast Ridge. As the weather was starting to give indications that a storm was approaching, the Workmans decided to divide their efforts; they wanted to reach a lower peak to the east which looked as if it would be an ideal observation point for the survey work, as well as climb B-H Watershed Peak. If the weather held, they could climb them on successive days; but if the weather took a turn for the worse, they would be out of luck. In order to play it safe, Dr. Workman and one of the junior Italian guides would head east for the survey work, while Fanny, Savoye, and two junior guides would attempt the main peak.

There was some wind overnight and air temperatures remained quite warm given the elevation of their camp. At dawn, clouds were lingering around some of the higher surrounding peaks but otherwise the sky was clear. After ascending the lower slopes of the B-H Watershed Peak, the climbers found the Southeast Ridge narrowed to a very thin arête, which was icy in places. Gingerly, they ascended as Savoye cut steps. The actual summit was a very compact, corniced snow dome. Regarding the view from the summit, Fanny wrote: "From this mountain was, perhaps, the most comprehensive and beautiful view I have seen in Himalaya." (It is interesting that she referred to it as the Himalaya and not the Karakoram.) They were peering down on Snow Lake and its glacier tentacles, which radiated in all directions. Recall that this particular glacial feature, dubbed 'Snow Lake' by Conway, is a large glacial

amphitheater lying at an elevation of 16,000–17,000 ft. Part of it may be considered a northern extension of the Biafo Glacier, with two large tributaries and several smaller tributaries.

Fanny and company could clearly make out most of the giants that guard the upper Baltoro Glacier to the northeast. She also wrote: “I had seen wonders not of the earth, the memory of which will cling while life lasts.” Through increasing cloud cover and intermittent fog, the party slowly downclimbed the arête. At one point, Fanny slipped while placing her foot in an icy foothold, but Savoye held her tight on the rope. The B-H Watershed Peak climbers arrived back at camp around noon without further incident.

While Fanny and party had braved the arête, Dr. Workman and guide had been able to ascend an unnamed snow dome (19,500 ft) about a mile to the east. The view of course was immense; the doctor was able to obtain some photographs, which would be used in the survey work. Dr. Workman and guide returned to camp a few minutes before Fanny and Co. As the weather was looking increasingly threatening, it was decided that after lunch they would pack up and return to their Upper Basecamp. It turned out to be another wise decision, as a three-day storm ensued and deposited 2 ft of snow at basecamp.

During their confinement at Upper Basecamp during the storm, the Workmans gave some thought to their exit strategy; they were still keen on descending the Biafo, but they were also contemplating even grander thoughts. Would it be possible to cross Snow Lake and descend to the Braldu Valley via the Panmah Glacier? After the storm had abated, with an eye to the possibilities of a revised exit, the Workmans asked Savoye, one junior guide, plus seventeen porters to trek to Snow Lake to make a reconnaissance of potential descent routes.

Meanwhile, at Upper Basecamp the Workmans, rarely idle, set out for a short excursion up the local tributary glacier (Neve), which was located northeast of camp. They made their way up with an allotment of porters but found the snow so soft that it was a difficult trek. They had left their snowshoes behind, a serious mistake given the conditions they encountered. The team slowly plodded upwards. On the second day, they had designs on reaching the upper basin and possibly making an attempt on the ridge located to the north, but after wallowing for hours in the snow, they decided to cut their losses and return to Upper Basecamp.

Savoye and party returned to Upper Basecamp shortly thereafter. As it turned out, they had been able to establish a camp on Snow Lake, but the next day, expecting to move eastwards as a unit,

Savoye found that the porters would not budge. Nevertheless, he and the junior guide proceeded to the southeast in snowshoes as a day excursion. It is unclear from the written account, and it is not indicated on the accompanying map, what route the two men took. It does appear that they crossed the body of ice which today is called 'Sim Gang' to a col (possibly Sim La, 16,520 ft) which is situated on a north-south-oriented ridge. The account does mention that from an unnamed col the two guides could look down onto a glacier (unnamed, but possibly the Choktoi) which appeared to link up with what they thought was the Panmah Glacier in the distance. These two men were most likely the first Europeans (or even first persons) to set foot on the Sim Gang Glacier; although Conway and the Workmans had been to the Hispar Pass on previous expeditions, no one had ventured this far to the east. ("Snow Lake," 1956, by Greenald in *The Alpine Journal*, Vol.64, pp.175–82 contains a good map and details on more recent exploration.)

On hearing Savoye's report when he returned to basecamp, especially the fact that the ascent of the col would be difficult for the porters, the Workmans had little choice but to settle for the trek down the Biafo. With some seventy porters, many of them fresh recruits sent up by the Mir of Nagar, the expedition departed Upper Basecamp for the last time. By noon on a cloudless day, they reached Hispar Pass (19,521 ft), continuing down the Biafo side only to be forced to camp on windswept slopes a few hundred yards below the pass because the porters refused to move any further. The next morning, after more cajoling of the porters, the expedition continued the descent.

One wonders at this juncture why the Workmans did not establish another basecamp on the upper Biafo Glacier in order to explore the intriguing geography of Snow Lake and the adjoining glaciers; they gave no indication either way. This was their second visit to Hispar Pass and yet they failed to take advantage of the opportunity. Sure, they had briefly camped on Snow Lake during their 1899 expedition, but there was so much interesting topography to explore that a more in-depth look seemed highly desirable. It is possible that they were growing weary of the antics of the porters and decided to forgo this opportunity.

Since it was now late August, the hillsides along the sides of the glacier sprouted grasses, flowers, and dwarf willows. There were many marginal lakes, some of them showing evidence of recently being drained. They were also starting to see the tracks of bears and ibex in the mud. They made good time on the descent, and with no additional porter strikes, the return to Askole was uneventful. After fifty-two days of camping on ice and snow, they had returned to the heat of the valleys. The expedition returned to Skardu and then Srinagar via the route it had used on the approach.

This expedition had its ups and downs, but overall, using any standard, it must be considered a success. The low points were the many troubles with the porters; we don't know why this was the case, although the inhabitants of Nagar at that time were not viewed—even by their own ruler, the Mir—as trustworthy. Compare these rascals with the men of Baltistan, who for the most part on other Workman expeditions—and other expeditions in general—were less troublesome, although they had their own demerits as well. One very substantial positive was the weather; during the early days of the expedition, there were several long-duration storms, but there were many extended periods of clear weather later on. The survey work expanded on the maps produced by Conway and the Survey of India. The professional surveyors established twenty-six stations, from which they made triangulations of the surrounding terrain. All the major glacial tributaries of the Hispar were explored as well. (There are some particularly good photos in their book, *The Call of the Snowy Hispar: A Narrative of Exploration and Mountaineering 1911*, including several noteworthy panoramic images.)

Chapter 14

The Workmans, Part 3

The Peak of Their Mountain Careers

During the summer of 1911 and again in the summer of 1912, the Workmans undertook their last two expeditions, numbers seven and eight. As the chapter subtitle suggests, these two summers were the culmination of the Workmans' exploration throughout the Karakoram-Himalaya; they had finally come of age, learning from their previous mistakes but implementing tried and tested methods. The narrative of both expeditions can be found in *Two Summers in the Ice-Wilds of Eastern Karakoram (1916)*. Both William and Fanny penned this book, with Fanny writing the bulk of the chapters. The reason it was not published until 1916 was the onset of World War I. Surveying was once again a major part of this expedition; fortunately, Dr. Calciati and an assistant were able to offer their services.

We join the Workmans in June of 1911, when they are encamped in Skardu. The expedition got off to a late start; it was delayed by a month, because either Fanny or William, the narrative does not tell us, came down with a serious case of influenza just prior to its commencement. Their immediate objective was to travel up the Saltoro and Kondus valleys, which would provide access to a system of glaciers and peaks located to the west of the Siachen Glacier, generally referred to as the 'Saltoro Range.' At that time, the summits in the area were labeled on the Survey of India map with austere names like 'Peak 35' and 'Peak 36.' This cluster of peaks lie in what is referred to as the Saltoro Range; the highest peak is known as 'Saltoro Kangri' (K35). The glaciers which lie to the southwest, although well south of the international border, have Chinese-sounding names such as 'Sherpi Gang' and 'Dong-Dong.' Their second objective was to make a brief reconnaissance of the Siachen Glacier in preparation for an extended field program the following summer.

The Workmans reached the Saltoro Valley from Skardu without mishap. The first item on the agenda was the exploration of the Sherpi Gang and Dong-Dong Glacier system (the latter is a large tributary of the former). While camped on bare ground a few miles up the side of the Sherpi Gang Glacier, they witnessed three *swas*, debris flows, within a span of twenty-five hours. The first phase consisted of large boulders accelerating down the steep mountainside in a slurry of mud; this was followed by a torrent of water. There had been no rain in recent days, so the Workmans attributed

these flash floods to the release of a small lake located high on the slope above (most likely the release of a glacier-dammed lake or possibly a jökulhlaup).

The expedition, including a small flock of sheep and goats, moved eastwards up the Dong-Dong Glacier as the Sherpi Gang Glacier was too crevassed for such a large group to attempt. The Workmans were able to ascend a ridge at 16,600 ft which provided an ideal site to survey the surrounding summits. As is common throughout the Karakoram, the non-glaciated peaks they observed often consisted of needles and spires; erosion by ice and water, as well as frost action, has left various configurations. They were in an amphitheater, however, and hence had limited views outside of the immediate association of peaks. Nevertheless, they were able to obtain, despite intermittent cloud cover, a number of quality images of the area, including several of the imposing southwest face of Saltoro Kangri II. (Saltoro Kangri consist of two summits—I, 25,396 ft, and a half-mile to the north, II, 25,279 ft.)

While Fanny and William were busy exploring the upper Dong-Dong Basin, one of the guides, Savoye, and several porters had been tasked with exploring the Kaberi Valley, located immediately to the west. The purpose was to reconnoiter the Kaberi Glacier, to see if the whole expedition should direct its attention in that direction. The north-south-oriented Kaberi Glacier bifurcates some 6 miles above its terminus. Savoye explored a few miles up the western branch but found the ice "a confused mass of large, debris-covered hillocks difficult to traverse …" In addition, there was persistent rockfall onto the ice from the surrounding walls. With this less than encouraging report, the Workmans decided to redirect their efforts towards the east side of Masherbrum, about 20 miles west of their current position. This meant the retracing of their inbound trek, down the Saltoro River and then northward up the Hushe River Valley. (Most of the major valleys in this area lie on a north-south axis.)

The Workmans found the lower Hushe Valley as barren as any desert; however, the upper valley supported pockets of trees—some type of cedar, they guessed, as well as a wild mulberry, or so they thought. Exceptionally large debris fans were evident with the Hushe Valley. The lobes of these fans were from a half to a full mile in width; some of them stretched nearly across the width of the valley. The Hushe River snaked its way around these protrusions. Dr. Hunter, who was the amateur geologist and wrote considerably on the subject in their various publications, noted that the fans consisted of hundreds of strata (layers)—evidence that they were built up over considerable time from numerous *swas* and were not the product of one or two massive events.

Several miles north of the village of Hushe, the valley splits into three sections. The expedition continued to trek up in the main valley, which has a slightly west of north orientation, before it reaches the terminus of the Masherbrum Glacier. Once they had climbed atop the ice, they found a 200–300-ft-high moraine, which they followed for some 5 miles up-glacier. This moraine supported a community of dwarf willows and other vegetation, including short grasses. As they made their way farther up the glacier, eventually into the basin located at the foot of the south face of Masherbrum (25,659 ft), they were granted unobstructed views of the twin-summited giant.

The following day, a climbing party—which consisted of the Workmans and four guides—ascended a subsidiary peak on the western ridge of the glacier, which they named 'Quartzite Peak' (16,840 ft); this high point on the ridge was composed of tilted slabs of quartzite. The photo on p.81 of their book is taken from this vantage point and does indeed show that the view was most definitely worth the effort to get there. They were able to lay to rest any speculation that a pass existed linking the Masherbrum Glacier with the Baltoro Glacier. The pass that an earlier traveler (Mr. Sillem) reported is now known as 'Ghondogoro La' and lies some eight miles farther east than he thought it did (It can also be spelled 'Gondogoro'). It links the Ghondogoro Glacier on the south to the Vigne Glacier, and ultimately the Baltoro Glacier on the north. See two paragraphs below.

This was their furthest point up the Masherbrum Glacier; they retraced their inbound track to the Hushe Valley and now turned their attention to the northeast, which eventually led them to the Ghondogoro Glacier (they spelt it 'Khondogoro'). In the Ghondogoro Valley, they found tamarisk trees, wild roses (in bloom), willows, and some cedars which added a splash of color to the otherwise stark scenery. The region was littered with friable (thin layers that exfoliate) pink granite boulders of varying sizes, which had rolled down from the surrounding slopes. The expedition established two camps on the Ghondogoro Glacier, the first some 4 miles above the terminus and the second one 8 miles above. In late July, they climbed towards an obvious low spot on the ridge that walled in the upper Ghondogoro Glacier.

Although it was partly cloudy when they arrived atop the ridge, they could clearly see to the north. They recognized the upper Baltoro Glacier and a large body of ice that occupied the space between where they were standing and the Baltoro. "From this no passage downward on the north side existed," wrote Dr. Workman. As it turned out, they were standing on the Ghondogoro La (18,323 ft), which today is used as a trekking route (albeit with a difficult rating). Why the Workmans thought the northern half was unclimbable is a mystery. Has the upper slope changed over the decades or was their

perspective skewed because they were looking downward through clouds? In any case, they made no attempt to downclimb the northern slope of the pass.

Satisfied with their efforts on the Ghondogoro Glacier, they moved some 5 miles westwards for a quick look at the Chogolisa Glacier. They traveled most of the length of the ice but did not report anything noteworthy. The expedition then reversed course, trekking back down the Hushe Valley. Not wanting to leave the region before checking all possible passes and routes to the Baltoro, they decided to reconnoiter the Aling Glacier, which they had left until now. This diminutive glacier lies west of the Masherbrum Glacier. They trekked most of its length before coming to a steep ridge which separates the Aling Glacier from the Liligo Glacier to the north. The Liligo Glacier is a tributary of the lower Baltoro Glacier; however, the intervening ridge was extremely steep, eliminating it as a candidate to be a shortcut to the Baltoro Glacier. It was now August 8 and they were ready to shift gears and move their operations over to the Siachen Glacier prior to the onset of fall.

The remainder of their wanderings in 1911 can be summarized as follows: by September, they had traveled up the Ghyari Glacier (recall that this is what early explorers called the 'Bilaphond Glacier') to the Bilafond La (18,370 ft) and started to descend the Lolofond Glacier, a tributary to the central Siachen Glacier (this was the same route taken by Longstaff two years before). While traveling on the Lolofond Glacier, they were hit by a major snowstorm; this, combined with the fact that it was getting late in the season, was enough for the Workmans to direct their staff to turn back towards civilization. This concluded the 1911 field season, during which they had been able to explore and survey hundreds of square miles of new terrain. While the Workmans had been venturing far and wide in the Karakoram, another American explorer had made an impressive discovery. Hiram Bingham had stumbled across the lost Inca city of Machu Picchu in Peru. The headline exploration that year would occur in mid-December when the members of a Norwegian expedition, led by Roald Amundsen, became the first humans to reach the South Pole.

The 1912 Expedition

This expedition was under the direction of Fanny, not that she would ever let anyone involved with it forget that fact. Its sole purpose was to explore in detail the Siachen Glacier. William was to take on the role of photographer and glaciologist. Like with other expeditions of this era, Fanny was able to secure the services of two professional surveyors: a Brit named C. Peterkin and an Indian named S. Singh.

The name ‘Siachen’ translates into ‘the place of roses’; this is because wild roses are one of a handful of bushes and flowers that grow on the mountain slopes which flank the glacier. The Siachen is the largest glacier in the Karakoram-Himalaya system, and the second-largest outside of the polar regions. Different sources assign various lengths—45 miles is the most often quoted value. However, we do know that it has been retreating considerably since the early 2000s. Although no one had an inkling until it occurred—that this body of ice would become in the mid-1980s the focal point of turf war between India and Pakistan (see Chapter 34).

The expedition arrived in Srinagar in April with the Alpine guide, Ceypien Savoye, who had shared in four of the Workmans’ previous expeditions. The big news at that time occurred a world apart from the foothills of the Himalaya; the White Star Line’s *Titanic* hit an iceberg in the North Atlantic while on its maiden voyage. It sank on April 15, with a loss of around 1,500 lives.

Savoye procured the services of Q. Simeon, R. Julian, C. Cesere, and R. Adolf, who as guides in the Alps, were hired to act as high-altitude porters. The Workmans were once again able to secure from the village of Kapalu the services of the Wazir (headman), Abdul Karim, whose job it was to hire and fire porters and oversee them wherever the route should lead. It was common practice for local rulers to order inhabitants in the villages near an expedition’s point of departure to ‘volunteer’ to be a paid laborer. It was a matter of prestige for these rulers; they wanted to please the all-powerful Westerners and at the same time show the extent of their own power over their subjects.

By the first week of July, the expedition, in stages, began the ascent up the Ghyari Glacier, the easiest route onto the Siachen Glacier. Vigne had gone part of the way up as far back as 1835 in his extensive wanderings. Longstaff had also used this route during his short 1909 exploration of the lower Siachen. Recall that the earliest explorers to the Siachen used the Ghyari Glacier as an access point because during the summer months the outflow of the river that emanates from the glacier, the Nubra, is uncrossable on foot or on pack animals. Small local boats might be used but it is just easier to trek up the Ghyari Glacier rather than attempt the logistics of numerous boat crossings.

The meaning of ‘Ghyari’ is unknown but the old name, Bilaphond, means ‘butterfly’ in Balti; it is named this, according to the Workmans, because of its overall shape, not because it is the haunt of millions of butterflies. Longstaff, on the other hand, quoted some locals who indicated that indeed millions of butterflies had been blown onto the ice in the distant past due to a freak of nature. In any case, the ice stream is currently about 12 miles in length and is oriented from southwest-northeast.

The expedition established two camps on the glacier as they ascended, the higher at a spot called 'Ali Bransa' (16,970 ft), where they found eight old stone huts. Closer inspection showed that these huts had not been occupied in recent times (probably decades). The question was whether past generations of Baltis had used this camping ground as a stop on a route through the heart of the Karakoram in order to connect with the main trade route to Tibet? If so, what caused it to be abandoned? The porters who lived in the closest villages were unable to shade any light on the use or abandonment of this small settlement, either.

After waiting several days for the most recent snowfall to melt, the expedition resumed its ascent to Bilafond La. Along the way, one of the Italian porters, Cesere, who was un-roped and just in front of Fanny, took a long fall (~80 ft) into a crevasse. It took well over an hour to extricate him; when he was hauled to the surface, he was alive and did not appear to have any fractured bones. He did, however, complain of lower back pain and he had a very weak pulse. Some twelve hours later, when a full recovery seemed possible, he died. He was buried under a pile of glacial rubble on the north side of the ice. It was a rough start to the expedition, but additional bad news arrived not long after.

The following story was told to the Workmans some days after it had occurred; Peterkin, one of the surveyors, had moved ahead of the main body of the expedition and at this time was camped on the lower Lolofond Glacier with a small complement of porters. He had assigned two of his porters to trek to the upper part of the glacier to retrieve a tent that was left behind. On the return trek, one of the porters fell into a supraglacial stream which they had attempted to cross. The other porter helped his companion out of the water but left the hypothermic victim on the edge of the stream and proceeded to trek back to camp. When he arrived back at camp in the afternoon, he did not say anything to Peterkin about the accident, and evidentially the surveyor did not notice that he was down one porter. The next morning, the porter who had returned to camp confessed what had transpired the previous day. When Peterkin's team arrived at the scene of the accident, the porter was already dead. Our Western minds wonder why the surviving porter did not raise the alarm on his return to camp. I would speculate that he hesitated to mention it because he thought it would bring down the wrath of the sahib. By morning, he had obviously changed his mind.

Over the following weeks, news of the two deaths worked its way through the rumor mill as various porters were sent to the nearby villages for supplies. The deaths and subsequent rumors produced two results. Firstly, a number of porters who were sent back down to those villages never came back up, even though they were 'under contract' to do so. Secondly, somehow the Western press

got a hold of a story that one of the Europeans had been killed in an avalanche. Most of the reports in Western newspapers reported the death of Dr. William Workman. When the mail caught up with the Workmans many weeks later, Fanny received a host of condolence letters from friends. To their entertainment, William and Fanny read scores of obituaries regarding the doctor's demise; one of the reports noted that he had been killed "while motoring over a Himalayan snow-pass."

On July 11, the main body of expedition finally crossed the Bilafond La (18,370 ft) under a blue sky and bright sunshine. Longstaff had crossed there three years earlier and thought this was the long sought-after Saltoro Pass (see discussion at the end of this section). To the southeast, they could clearly see a small section of the Siachen Glacier; however, in their immediate path was another glacier some 6 ½ miles in length, which they named the 'Lolophond' ('Lolofond' is the modern spelling). They took the name from the camping ground adjacent to the upper glacier, which they learned from their Balti porters. This of course shows that some of the locals traveled at least that far up the ice, if not farther.

Several miles to the north stood a peak; Fanny estimated it to be around 21,000 ft, but its measured height was just over 20,000 ft. She named it 'Tawiz,' after the Balti word for 'magic.' The Workmans had first laid eyes on this summit during their previous summer's reconnaissance. With several guides and a porter to carry the survey and photographic equipment, they made a day trip to the peak, ascending part of the way to the top. It was a cloudless day and as the images from their book indicate, the view was nothing short of stunning—a panorama of glaciers and peaks. They had an up-close view of Saltoro Kangri I and II to the northwest and their first glimpse of the peaks that compose the upper Siachen Basin to the north and northeast.

The next day, they packed up camp and moved down the left margin (north) of the Lolofond Glacier to where it flows into the Siachen. At this confluence, the Siachen Glacier is some 2 ½ miles in width, the elevation is approximately 16,300 ft, and it is roughly halfway up the length of the glacier (~20 miles from the terminus).

The Workmans established a basecamp from which they would explore the upper Siachen and the main tributary glacier that flows in from the east, the 17-mile-long Teram Shehr. From basecamp, teams of porters were periodically sent back across the Bilafond La down to the nearest village, Goma, for supplies. A less than reliable man from Srinagar was put in charge of basecamp, as it turned out he was able to pilfer supplies before they even made it up the glacier.

As it was now mid-summer, this section of the Siachen was dissected by numerous "glacier-rivers," which made travel difficult and dangerous. When the expedition crossed the ice to the eastern margin, just to the south where the Teram Shehr Glacier joins the Siachen, they found several acre-sized plots of grass dotted with a variety of flowers (edelweiss, gentians, saxifrage) surrounding two small lakes. They established another camp in this idyllic location from which they could probe up the Teram Shehr Glacier.

Nearby, they also stumbled across a rock circle some 12 ft in diameter in which they found a large pile of ibex skulls and horns; it was obvious to the observers that humans had arranged these bones. It was also clear—due to the extensive growth of moss and lichen on the rocks which composed the wall—that it had been undisturbed for many years. The translation of the name 'Teram Shehr' is debatable; the Workmans suggest it means 'oasis city,' while others attribute it to 'destroyed city.' In any case, it seems to indicate that a small group of people temporarily encamped there in times past. What they were doing there we can only speculate, as the porters were as ignorant as the Westerners and were of no help in trying to resolve the mystery.

During the days that the expedition inhabited Teram Shehr camp, a small herd of ibex grazed nearby; there were also prints of foxes and wolves, but no actual sightings. Bird life was scarce but ram-chikor, pigeons, and some unidentified grey birds put in an appearance. Since there was a considerable amount of grass, the flock of twenty sheep which had been purchased at Goma were safely herded to this camp (a major accomplishment considering the miles of glacier travel they had to traverse). Of this number, nineteen eventually ended up on the menu; the one well-fattened survivor was taken back down to Goma at the end of the expedition.

After several days of snowfall that forced the team to remain in camp, the guides and Workmans made a two-day ascent of a summit they called 'Junction Peak' (20,570 ft, no modern name) located 2 miles to the southeast of Teram Shehr camp. The view up and down the length of the Siachen was almost complete; however, storm clouds developed by mid-morning, so photography and surveying were put on hold.

The next day, the climbers and their contingent of porters departed for the upper Teram Shehr Glacier. It took several days of moraine-hopping and stepping into countless shallow melt pools, but they eventually arrived at a heavily crevassed plateau (18,000 ft) in the upper basin. This was as far east as they were going to proceed; Savoye, the chief guide, called a halt to forward progress due to the

danger of another crevasse fall. A considerable amount of fresh snow now concealed these lurking gaps in the ice.

The party could see on the eastern horizon what looked like a saddle amidst the surrounding peaks. They speculated that this might be the link to the Central Rimo Glacier. The Workmans discussed the possibility of camping nearby and sending a lighter team up the next day, but even that was deemed too risky. As we will discuss in a later chapter, in 1929, the Italian Giotto Dainelli—who had been on the 1913–14 expedition led by De Filippi—trekked up the Teram Shehr Glacier and down the Rimo Glacier; he named the saddle between the two glacier systems 'Italia Pass.' Part of the reason a greater effort was not made by the Workmans to push farther east was that the exploration of the upper Siachen was their top priority, and since the days were passing quickly, they could not afford any time on this side-project.

Their next move after returning to basecamp was to trek several miles up the Siachen along its west margin, where the largest of the western tributary glaciers enters the system. This influx of ice is from the 16-mile-long Peak 36 Glacier; its accumulation zone lies to the northeast of Saltoro Kangri. The glacier, which was at that time nearly devoid of surface moraine and hence extremely brilliant, maintains a northwest orientation as it approaches the Siachen. The expedition spent four days exploring this glacier, ultimately reaching 19,100 ft on the ridgeline just north of Saltoro Kangri II (near Sherpi Col). To the west was the Dong-Dong Glacier, which they had explored the previous summer. They also surveyed a substantial twin-peaked mountain to the north, which Fanny named 'Mt. Ghent' (24,280 ft and 24,090 ft, the name has been altered to 'Ghent Kangri.' First ascent of the highest summit was in 1962 by an Austrian expedition who climbed the West Ridge. The mountain has a third summit which is on the ridge to the east and is known as 'Mt. Ghent III,' 22,965 ft).

After retracing their steps down Peak 36 Glacier, the party moved up the east side of the Siachen into the upper basin. This part of the upper Siachen contained quite a few supraglacial lakes. These lakes were often visually stunning, iridescent blue water set amidst a basin of bright white snow with layers of aquamarine ice beneath the surface of the water. At one of the lakes (~17,000 ft) they found a concentration of mosquitos. They established a camp in the middle of the glacier at a little over 18,000 ft just as a three-day snowstorm commenced. On day one of the storm, they moved back down the glacier a few miles to wait out the weather. By the end of the storm, four feet of snow had accumulated in some places.

As the new snow began to melt, they retraced their track into the upper basin. They pushed past the site of their previous camp and found a better location; it was on a rock spur above the east margin of the glacier that had its own small lake (18,400 ft). It was in this camp that they found two piles of stones which did not look as if they were naturally occurring. The configuration of the stones appeared to have been arranged by humans, but they no longer retained the shape of large cairns, if that was indeed their original purpose. There was no evidence of stone huts or any other signs of human occupation.

This inner sanctum of the upper Siachen consists of a large tributary glacier (Hardinge) which flows in from the west (labeled on the Workmans' map as 'West Source Glacier'), and the main stem of the Siachen which continues to the northwest for another 5 miles. On modern maps, I have seen the upper Siachen labeled as 'Source Glacier'; why it does not remain the Siachen is a complete mystery. In my opinion it should, since it is one continuous dynamic ice system. For continuity I will continue to refer to it as the 'upper Siachen.' The whole area is surrounded by a number of peaks rising above 23,000 ft.

The expedition continued to ascend the upper Siachen, which itself bifurcates into two plateaus; these are divided by a mile-and-a-half-long protruding ridge. To the north of these two plateaus is a ridge that forms the international boundary between India, Pakistan, and Tibet (China). This east-west-oriented divide also forms a very important watershed; to the south, all rivers drain into the Indus Basin and to the north the Yarkand Basin. On the ridge, a few feet makes the difference whether a drop of water ends up in Central Asia—where there if it is not used for irrigation, it evaporates—or whether it makes its way to the Indian Ocean.

The expedition ascended the plateau to the west through ever-softening snow. After navigating through a maze of crevasses, they came to a col on the ridge where massive cornices guarded the leeward (north) side. Through a rent in the clouds, they had a brief glimpse of the Gasherbrums, which were only about 10 miles to the northwest; fortunately, they were able to capture a photograph of the view during a brief parting of the clouds. Looking down past their feet, some 5,000 ft below they spotted several large glaciers; the closest one (Urdok) flowed towards the north. Like all good explorers of the day, they deployed the hypsometer and found the elevation to be 20,860 ft. Since the saddle had no name that they could find on any of their maps, they named it 'Indira Col' ('beauty,' after the Hindu goddess Laxmi), a name which remains to this day.

Despite the high elevation, the measured air temperature was 50° F. Fanny also noted that a butterfly and a lone wasp were fluttering on the col. A moderately strong wind was blowing, so she speculated that these insectoids had been carried aloft by the wind rather than by their wings. The descent in such conditions was treacherous, waist-deep snow at times; nevertheless, they all made it safely back to camp. After a rest day, they ascended the eastern plateau. After a two-and-a-half-hour ascent of the ridge, they reached a col at 19,210 ft. Once again, they were gazing into Turkestan—hence they gave this feature the name 'Turkestan La.'

The ridge that forms the northern border of the Siachen is rarely visited today due to the ongoing war on the glacier between Pakistan and India. In actuality, there are a number of cols on this long stretch of ridge; for example, there are two Indira cols (west and east) and two Turkestan Las (north and traditional). The best information on this is by the Indian mountaineer Harish Kapadia, who led a small expedition of five fellow Indians to the upper Siachen in the summer of 1998. He noted that the Workmans were on what is today called 'East Indira Col,' and the elevation is approximately 19,030 ft, a far cry from the 20,860 ft given by them. It is difficult to know which of the Turkestan Las the Workmans climbed, but probably the eastern-most of the two (on Kapadia's map it is labeled as the 'traditional Turkestan La'). It is estimated by Kapadia to be 19,060 ft—a lot closer to the Workman value. Kapadia also noted that Younghusband's 1889 attempt to ascend a pass (Saltoro) that would lead across the Karakoram from the upper Shaksgam Basin, via the Urdok Glacier, was the North Turkestan La. Recall that he turned around short of reaching the pass. Although Kapadia's expedition reached these passes from the south, they did not attempt to make the traverse. In fact, I have never seen an account of any mountaineers who have crossed any of these passes.

In the early 20th century, there was a lot of speculation in the geographic journals regarding the passes that linked Baltistan with Turkestan. There were numerous reports of hunters, explorers, and traders making their way over some obscure pass linking the two regions. Most of the time, these adventurers really had little idea where they were—recall that the maps of the day were quite inaccurate; in fact, the earliest of travelers had no maps. With regards to what liked two old cairns at their high camp, Fanny suggested that some locals had gone up that far in order to reconnoiter a possible route, but once they had gotten a good look at the ridge they would have to climb, they turned tail for easier ground. There is a slight chance that conditions in earlier centuries were considerably easier, but this type of terrain would have thwarted the bravest Balti given any snow and ice conditions.

Since the expedition still had supplies in hand and a group of thirty-five willing porters, the Workmans decided to now turn their attention to the environs of the West Source Glacier (Hardinge Glacier of today). The most prominent mountain in the vicinity is a granite mass they labeled 'The Hawk' (22,148 ft, still called that today, does not seem to have been climbed); it lies 3 miles to the south of their highest camp and can be seen from anywhere on the northern half of the Siachen Glacier.

The lower West Source Glacier was covered with supraglacial lakes, which at times had to be navigated very gingerly as the nocturnal layer of ice was thin and hence prone to crack when someone took a step onto it. The good news was that the gradient of the glacier was slight. The upper glacier consisted of a couple of sizeable plateaus rimed by several high summits. They named two conspicuous peaks that lay on the north-south divide which forms the boundary of the Kondus-Siachen watersheds: 'Silver Throne' (21,653 ft, climbed several times since their visit) and 'Lower Silver Throne' (~20,330 ft).

They decided to camp for three nights in the middle of the glacier from which they could make forays farther to the west. On the first day from this camp, they took the southwest branch of the glacier and ended up scrambling over the northern flanks of Lower Silver Throne onto a low spot on the ridge. From this vantage point, they were able to look down onto the Kondus Glacier to the west. They had found yet another col connecting one watershed with another; unsurprisingly, this one was given the name 'Silver Throne Col' (19,610 ft). The following day, they explored towards the northern plateau of the West Source Glacier. Once ascended, it gave them grand views towards the northwest; the Gasherbrums and Golden Throne (Baltoro Kangri) were center stage. However, more immediate was a group of unnamed mountains due north which they later called the 'King George V' group. It consists of Queen Mary Peak (Sia Kangri, 24,350 ft, four connected summits) and Mt. Hardinge (23,270 ft, does not seem to have had an ascent). The latter peak is named after Charles Hardinge, who was the Viceroy of India from 1910–16.

Although the Workmans were keen on exploring this region further, one big lure being the possibility of a pass that led to the upper Baltoro Glacier, the weather was an issue. It had deteriorated to the point that they decided to trek back down to the Siachen to their long-ago established basecamp. As it turned out, they spent the next two weeks waiting for the weather to improve at basecamp. What anyone who has read Fanny's account must wonder is if the exploration of the upper West Source Glacier was one of the pre-eminent goals of the expedition, which she clearly stated it was, then why was it scheduled so late on the agenda? A question that she never did answer.

One peculiar physiological apparition as noted by Fanny occurred when they had descended to a camp at 14,000 ft. By that point in time, they had spent some five weeks at or above 15,000 ft. She wrote, “I experienced a relaxation of the lungs and nerves, which prevented proper sleep and produced a slackness of energy, from which recovery was found only when the standard heights of over 16,000 feet were again reached.” This would appear to have been an inverted case of altitude sickness, a malady I have not seen reported in any of the many accounts I have read of early explorers who have spent weeks at elevation. This is one of those occasions where the reader must wonder if Fanny was making this up just to prove that she (and the good doctor) had no problems with altitude sickness.

When the Workmans returned to their basecamp, they found the food situation in chaos. It was obvious that the basecamp manager had been stealing food (diverting it en route). Loads of atta, which arrived from lower camps and was ultimately sourced from the nearest village, was underweight. It was supposed to consistently weigh 60 lbs, yet upon inspection it ranged from 30–50 lbs. There were also problems with the collection of firewood at lower elevations and brought up the glacier so the porters could use it for cooking. Rest assured that the manager was set straight by Fanny and from thereafter the ferrying of food and wood from below improved greatly.

Despite a snowstorm which occurred on August 19, William, Fanny, and guides departed basecamp and worked their way north-northwest along the Siachen back to the West Source Glacier for additional exploration. Eventually, they took a more northwesterly track than they had on their first foray several weeks earlier. Their most important discovery was a pass on the ridge to the west, which they named ‘Sia La’ (18,700 ft, ‘Rose Pass’). North of the Sia La is the upper Hardinge Glacier, which they personally did not attempt to explore. For thoroughness, I would have expected that they would have spent a few days on it to at least see if it was linked to the Baltoro Basin in any fashion. As it turned out, the surveyor, Mr. Peterkin, did trek up there and made the ascent of the ridge that separates the Hardinge Glacier from the upper Kondus Glacier.

At this juncture, the Workmans decided that they had accomplished their objectives and it was time to leave the Siachen Basin. Hence the expedition traversed the Sia La and started to descend the northeastern arm of the Kondus Glacier. The main ice stream of the Kondus Glacier is oriented north-south; its upper basin, which is segmented into a host of small glacial basins, lies southeast of the five summits of Baltoro Kangri (Golden Throne), some 9 miles distant.

The Workmans were able to establish that the formative barrier of ridgeline and mountains to the north of the Kondus Glacier, dominated by Sia Kangri (24,350 ft), did not allow for any reasonable access to the west or to the north. In other words, there is no obvious passes between this part of Baltistan and the region of Yarkand. In addition, Fanny also noted that from their vantage point, she could not identify any passes between the Kondus and Baltoro basins. Today, we know that this is only partly true. A bit farther north from where she was surveying—that is between Baltoro Kangri and Sia Kangri—there is a low spot on the ridge that is named the 'Conway Saddle' (19,596 ft). It was climbed and named on May 28, 1929 by the Duke of Spoleto expedition from the west side (Baltoro Basin). This saddle connects the upper Kondus Glacier with the Abruzzi Glacier. So yes, technically there is a link between the Baltoro-Kondus-Siachen glaciers, but the route is only for the hardiest of mountaineers and in no shape or form would have been used by Balti merchants in past centuries.

After a flurry of surveying, the expedition continued down the Kondus Glacier, which they found rough going due to the moderately steep gradient and the hummocky nature of the ice. Near the terminus of the Kondus, early one morning (August 25) while camped on the ice, they experienced a pronounced earthquake. Avalanches roared down from the surrounding peaks and surface moraine from the nearby hillocks came sliding into camp. Several days later, when they were off the ice and in the Kondus Valley, there was an unusual amount of dust in the air, a result of all the rockfall that the earthquake had generated. Local villagers recounted the event to the expedition as they witnessed it. The expedition returned to the Indus Valley via the Ganse La.

As a point of interest, it should be noted that during the six weeks on the ice, a trio of crows followed the expedition from camp to camp, scavenging food scraps (there is a photo of two of them on p.178 of the Workmans book). Once the expedition had trekked off the terminus of the Kondus Glacier, the crows moved onto other hunting grounds.

The Workmans: Factual or Frauds?

Before discussing the overall merits and problems of the Workmans' eight expeditions, let me point out the highlights of their last two expeditions. First, their book covering the 1911 and 1912 campaigns contains many what I would consider good to very good photographs. Dr Workman seems to be the primary photographer and he was quite good at it. There is a definite progression in the quality of their images from the first several expeditions to the last several.

Second, as previously noted, the good doctor was an amateur geologist and glaciologist; hence their books are also filled with notes of descriptive geology and glaciology. For example, he mentions the fact that, "One mountain may be of granite and the next of shale or limestone, or the same mountain may consist of two or more rock-varieties more less intimately mingled." This was typical for explorers of the day who were not specialist in a given field—in this case geology—to describe the interesting features and phenomena they saw and offer some explanations regarding origins and structure. In 1908, he gave a lecture at the Royal Geographical Society regarding his glaciological work on Nun Kun.

Third, the survey work on the last two expeditions was as good as any expedition of the era. Recall that they did have a small team of professional surveyors on loan from the Survey of India. With all the new data they collected, the Workmans were able to greatly improve the existing base map. They also named many topographic features, and the majority of those names were officially accepted by the governing bodies of the day and are still in use. Certainly not all, but a large amount of their data was accepted by the Survey of India and incorporated in their map revisions. Their own survey professionalism improved considerably during their last two expeditions.

Fourth, let's not forget that the Workmans were no longer young; at the end of the 1912 expedition, William would have been sixty-five and Fanny would have just turned fifty-four. The amount of time they had spent at mid-elevations and the rigor of glacier travel and short bursts of moderately serious mountaineering, considering their ages, is remarkable. Keep in mind that the average lifespan in this era was at least ten years lower than it is nowadays; so, for William to be doing what he was doing while in his sixth decade is a major achievement.

Their book *Two Summers in the Ice-Wilds of Eastern Karakoram* (1916) was reviewed in 1918 by I *Geographical Journal*, Vol.51, No.1, pp.38–42. Although the reviewer praised the Workmans for their survey work and descriptions of the geology and glaciology, he was not kind to their pointed remarks made at Dr. Longstaff. There had been some bad blood and rivalry between the Workmans and Longstaff, and they unfortunately chose to highlight this in their book. Keep in mind that Longstaff was held in the highest regard in the United Kingdom, so to cast disparaging remarks in his direction did not go over well in the British journals and press, or with geographical societies (see pp.186–9 in *Two Summers in the Ice-Wilds of Eastern Karakoram* for Fanny's argument with Longstaff over the identification and naming of features on the Siachen Glacier). Longstaff was far from being perfect in his

own surveying and interpretation of the complex topography of the Karakoram-Himalaya, but he had more tact when it came to disagreeing with others than either Fanny or William possessed.

We have already subjected William and Fanny to a fair amount of criticism regarding specific issues, but what can we conclude regarding their work overall? It is obvious that they were tireless in their quest to explore and map the region. With eight expeditions from 1898–1912, they far exceed most others of that era for the sheer number of miles covered. The fact that they published as much as they could and continued open dialogue with their contemporaries indicates that they were after the facts. Many contemporaries evidently viewed them as self-promoting, which to a large degree it does appear that they were, but keep in mind that most explorers were self-promoting. It would also appear that much of the antipathy they generated was because they believed that they could not be wrong in their 'science' and surveying. If they would have approached the survey work as a process (errors and all) rather than as black and white, they would have been better off and better received.

We cannot overlook the fact that they were well outside the mold of most Karakoram-Himalaya explores in that age; they were a married couple for one, and second, Americans. These two stigmas probably fueled the fierce competitive nature of their work (i.e., surveying, altitude records), although they seem to have been competitive by nature. In the end, the Royal Geographical Society did recognize their work; Fanny was in the first group of women to be admitted into this illustrious 'fraternity' of explorers.

One of the minor criticisms I would level at them is their excessive baggage—mountains of it. It was common for expeditions of that era to head into the mountains with massive amounts of food and gear, but the Workmans seemed to carry this to the extreme. Even after they had established basecamps high up some glacier, they would employ a host of porters to carry gear to an intermediate camp. Case in point, on the Hispar expedition, when they made a two- or three-day foray from basecamp, they would still employ fifteen to twenty porters to carry their gear: just for two or three nights! This was expedition bloating, which of course meant that they had to employ an even larger corps of porters, which increased the potential for strikes and mishaps.

One might support the idea that large expeditions and their need for hundreds of porters would boost the local economy. At this time, villagers either farmed or were pastoralist—in other words, they lived in a subsistent economy. Money did not take on value to them for several more decades, hence

their interest in earning money was often lacking or nonexistent. In fact, when a local ruler demanded that they become a porter, it would have been more of a hardship than anything else.

A second criticism, more serious than the first, is the treatment of the locals they employed. The Workmans always had government permission to enter the regions they traveled; in addition, they had the blessings and cooperation of the local rulers. In theory, the local ruler would frequently demand that a certain number of local men would act as porters. In their narratives, Fanny and William praised local men who were faithful to the cause but were harsh on those who ran afoul of their expectations. Although the handling of the porters was in theory to be the job of what we would nowadays call a 'sirdar,' which is essentially a foreman, those individuals put into these positions, for whatever reason, often had little power over the porters. It is interesting that they devoted a short chapter in their book *Ice-Bound Heights of the Mustagh* to the topic of porter-explorer relations.

In general, reading through the various narratives written by the Workmans, it does appear that they were quite condescending towards many of the local inhabitants they encountered in their travels. Given their wealth, upper-class status, and their Victorian ideals, we should not be too surprised at this. However, they should have realized that the world in which the porters lived and their own were as divergent as possible; and hence they should have been more understanding of the uneducated, extremely poor locals who had very limited contact with persons from outside their small villages.

We should also consider that their contemporary explorers (often wealthy Europeans for the most part) were not as condescending to the locals as the Workmans had been. There are plenty of examples in the literature of the area where other explorers were less than complimentary towards their porters or the locals they meet. Tilman, for example, in his account in *Blank on the Map*, called some locals in a village he passed through "idiots" and "morons." But he did so in writing, not face to face. Of course, Tilman, Shipton, and Smythe were famous for getting along and their comradery with local help, especially the Sherpas. Charles Granville Bruce, in his book *Twenty Years in the Himalayas*, referred to one gentleman he came across as "Neolithic." Here was a man who had spent his adult life living in India, working with Indian and Nepalese soldiers who he respected, and he of course spoke Nepali.

My point here is that it is one thing to be frank when writing (inbreeding was a major issue in many remote villages in that era, which led to less-than-stellar IQs in some of the populace), but it is another to treat the locals with distain. Kenneth Mason (who you will meet in more detail later), in the

opening chapter of his narrative regarding his 1926 expedition to the Aghil Range, wrote the following about porters: “They must be well fed and well cared for, but not spoilt, and they will require almost superhuman patience, as children do. They must be promised fair wages and full stomachs, fairer and fuller than they get at home; such promises must be kept and each man must have food that he likes.” (*Exploration of the Shaksgam Valley and Aghil Ranges*, 1926).

One way to grasp the prodigiousness of the Workmans’ travels is to view a map of the greater Karakoram and Kashmir, superimposed with lines highlighting their travels (there are several examples in their books). Also consider that some of those routes they traveled many times. When it came to the quality of their surveying, it often lacked, sometimes very poorly, but it did improve in time and by the end of their careers they were employing professional surveyors. They certainly made a significant contribution to the geography of the region. In addition, the good doctor published a number of articles in medical journals regarding high-altitude physiology, which contributed to the body of knowledge on this subject.

Although they certainly had their personal faults as well as a lack of professionalism much of the time, the overall volume of their work and their contribution to the understanding of the Karakoram deserves greater recognition than they received during their lifetimes or over the century since they parked their bicycles and donned climbing boots. Case in point—before I started to research explorers of this era, I had never heard of the Workmans except when they were mentioned by other explorers. I could not tell you anything about them or their travels, and I had read quite a bit. The fact that to date there is no biography written about them would indicate that they are still off the mountain exploration radar.

During World War I, exploration of the Karakoram-Himalaya region was put on hold by everyone; this included the Workmans, who remained in France. By the time the war had concluded, Fanny’s health was on the decline. We don’t know the details, but her days of roaming the higher mountains and glaciers were over. She died in the South of France in 1925 at the age of 66. A complimentary obituary written upon Fanny’s death can be found in the May 1925 issue of *The Alpine Journal*, pp.180–2. After her death, Dr. Workman returned to America, where he remained through the rest of his life. He made his final journey in 1937 at the age of ninety-one. So much for Dr. Workman quitting his medical practice in Massachusetts because of ill health!

The Mystery of Saltoro Pass

In the last couple of decades of the 19th century and the first few decades of the 20th century, there was a lot of interest and confusion regarding the existence and location of a pass that linked Baltistan with southwestern Tibet. I have referred to it on a number of previous occasions, but let me attempt to bring the loose ends together and put it to a final rest.

The pass was thought to be located between the Karakoram Pass in the east and the Muztagh Pass in the west, and it supposedly had been used as a trade route linking Baltistan with Chinese Turkestan. The identity of the first Westerner to hear about it from locals is unknown; however, in an 1911 *Alpine Journal* article, Longstaff said that Vigne went looking for it in 1835 (De Filippi said it was 1842). However, according to Fanny Workman (see the 1914 article in *The Geographical Journal*), she could not find any mention of the name 'Saltoro Pass' in any of Vigne's writings or maps.

In Vol.2 of Vigne's book *Travels in Kashmir, Ladakh, Iskardo*, 1844, Chapter 12, he described his search for a pass to Khotan from the Skardu area. The local ruler of Skardu, Ahmed Shah, explained to him that there were two travel options for reaching Khotan. First, Vigne could travel to Hunza and then, from there, with the assistance of the Mir of Hunza, he could traverse the Karakoram either using the Shimshal or Khunjerab passes. However, due to the lateness of the season (it was early September), it was not possible to cross over to Hunza via the Biafo-Hispar glaciers or Nushik La. The second option was a pass (unnamed in the account) that had been used in the past but even in Vigne's day was no longer used by the locals. Supposedly, Ahmed Shah sent out a few men to reconnoiter the pass, but when they returned, they reported that they had found the pass but it was far too difficult to traverse. In Vigne's account, he indicated that the men sent out to reconnoiter the pass were only gone a few days; hence it could not be too far away, if they visited it all. I suspect that Shah sent some men out of town for a few days, just to appease Vigne. You would think that if there really was a pass that close to Skardu, even if it was too technical to use, that the Shah would have had Vigne accompany his men so he could see for himself.

However, from what appears as a bit of consolation thrown at Vigne by Ahmed Shah, the latter said there was a way to get to the upper Nubra Valley over a pass (also unnamed). Vigne decided to give this a try. He traveled up the Shyok River and then spent several days on an unnamed glacier trying to reach this pass. The weather was snowy, so the party turned around before reaching the pass. My guess is that they were trying to get over the Gayung La (18,700 ft) well to the south of the Bilafond La. In any

case, a word search of Vigne's text for a 'Saltoro Pass' (or variant spellings) shows no results. At one point during his travels, he was able to look up the Saltoro Valley from a ridge along the Shyok River, but that is the only connection with Saltoro.

The reference of a pass connecting Khotan to Baltistan is by Younghusband. He is the first that I can find to mention it by name—the Saltoro Pass. It turned out that Younghusband's guide on his 1889 expedition, Wali, told him about it. Here is what Younghusband said: "… Wali the guide had told me there was a way to Baltistan by a pass called the Saltoro. No one, apparently, had crossed this pass for many years …"

Based on this information, as we have seen, Younghusband, Wali, and a part of his 1889 expedition went in search of the pass; he thought it might be at the head of the Urdok Glacier, because Wali had indicated it was in that general direction. Younghusband never made it to the top of the ridge, so he could not support or disavow the existence of a pass. He was probably aiming for, as we have noted in this chapter, the North Turkestan La, but it is hard to be very definitive. However, as we just saw, the Workmans found several 'passes' (low spots on the ridge) at the head of the Siachen Glacier, but they were not practical for non-mountaineers to use. Conway also had something to say about the Saltoro Pass in his book, *Climbing and Exploration in the Karakoram-Himalayas* (1894). In one passage he says, "The Oprang River rises in a great glacier descending northwards from the Saltoro Pass." (recall that the Oprang River is the old name for the Shaksgam River). In a later passage he states based on information obtained from his porters, there "…is a pass leading up the southernmost of the main easterly branches of the Knodus Valley, and another out of the Khokun Valley, both giving access to the Oprang Glacier." He does not specifically refer to this as the Saltoro Pass, but it would be in a position which would make it a likely candidate.

When Longstaff came along in 1909, he thought that he would naturally find the Saltoro Pass at the head of the Saltoro Valley. However, the pass that he named 'Saltoro' (today's Bilafond La) does not directly connect Baltistan with Tibet—it's about 30 miles south and east of the border. In addition, no one seems to know what 'saltoro' means in Balti; one suggestion is that it is related to the term 'Tsai,' which is evidently borax (Carter, 1975).

What I conclude is that the original information passed down verbally in the early 19th century was interpreted inaccurately—that is the pass directly connected Baltistan with Tibet. It may be that the pass noted in this context was used by locals to travel between the two regions but was not actually on

the main divide, and somehow it was misunderstood by Vigne and others to be located on the divide. Hence decades later, Younghusband was looking for it on the main Karakoram divide. This then leads to the possibility that the Bilafond Pass of today is actually the Saltoro Pass of yesteryears, the confusion being its location well south of the main divide. In Dr. Neve's account (*Thirty Years in Kashmir*, 1913—recall that he accompanied Longstaff in 1909), when he described traversing the pass, he did not refer to it by any name; later in that same chapter, he referred to it as 'Bilaphond Pass.' This leads me to suspect that at the time of the crossing, Longstaff was not making a big deal regarding having found the mysterious Saltoro Pass, otherwise it seems that Neve would have made note of it.

If the Bilafond is the Saltoro Pass, it is possible that it was used as a shortcut between Skardu (central Indus Valley) and the Karakoram Pass. If this is the case, it would have been a very glaciated route for locals to have used, even if the ice was pretty smooth. It would have required a trek up the Ghyari Glacier over Bilafond La, down the Lolophond Glacier, across the width of Siachen Glacier, then up the Teram Shehr Glacier traversing Italia Col, and then down the Central Rimo Glacier, and finally a short section across the terminus of the North Rimo Glacier. It would have involved something on the order of 55 miles of glacier travel, traversing two high passes where the weather is often not the best even in the summer months. But the fact that the Workmans and others had found evidence that locals had at least visited these remote glaciated regions hints at the possibility that a few hearty souls had used this route as a shortcut or maybe a trade route. Keep in mind that some intrepid Baltis had used the Muztagh Pass on a regular basis, although the amount of glacier travel is significantly shorter than the one just described.

What is telling about this issue is that following a lecture in 1914 in front of the Royal Geographical Society given by the Workmans regarding their Siachen Glacier explorations, there was a discussion session with contributions by Younghusband and Longstaff, who were both in attendance (the discussion is written up in a separate paper). Here is what Younghusband had to say about it when he was out exploring in the late 1880s: "All that was known to us was a rumor that a pass did exist from Chinese Turkestan in the north into the Soltoro district of Baltistan on the south. There had been such reports for many years, and in 1889, when I was deputed by the Government of India to explore the passes into Hunza, I was asked on the way to try and find this Soltoro Pass."

I think what is revealing is that he uses the word 'rumor,' and second, he is definite that the pass connected Turkestan to Baltistan. The latter strongly implies that it is not just a pass internal to Baltistan. There are some subtle differences in this account and the one he gives in his book *The Heart of*

a Continent, which is what I used to quote him earlier. In the book, he gives the impression that the search for the pass was an impulse; Wali the guide mentioned it so: "… but before going onto the Shimshal I thought I might well employ a week or ten days in seeing what it was really like [the pass]." This is not the same as being commissioned by the government to specifically find the Saltoro Pass!

Longstaff also waded in the discussion that followed the Workmans' lecture. He maintained his earlier assertion that the Bilafond Pass is actually the Saltoro Pass, and that he now believed (he changed his mind between 1909 and 1914) that the Baltis of old used the Siachen as a trade route. He conjectured that they trekked up Ghyari Glacier over Bilafond La, but did not traverse the Teram Shehr Glacier; they actually trekked straight up the Siachen Glacier to the upper basin and traversed to the north via one of the passes recently explored by the Workmans. The Baltis then descended the Urduk Glacier until they reached the Shaksgam River. He believed that an increase in the volume of ice had made it too difficult (no one was thinking that possibly the glaciers had thinned and hence were more broken than in previous centuries). Fanny Workman negated Longstaff's supposition; the route would only be viable to mountaineers with proper equipment. One could argue that it is possible that a change in the configuration of the ice made the trade route no longer viable; it is impossible to be definitive in either case.

Longstaff also stated that his location for the Saltoro Pass had been accepted by the Survey of India and was used on one of their charts (chart XX on p.202 in *A Sketch of the Geography and Geology of the Himalaya Mountains and Tibet*, Burrard, S.G. and Hayden, H.H., 1907–08). He was very much opposed to changing the name to 'Bilaphond' (to use the old spelling which was in use during that period). Although modern maps have assigned the name 'Bilafond La' (or 'Pass'), you will find maps and accounts that refer to it as the 'Saltoro Pass.' The real issue is that this pass, whatever name you want to use, is not a direct link across the Karakoram as purported by Vigne and Younghusband. It is possible that the Bilafond La is the Saltoro Pass and that the confusion lies in the fact that it was used as part of a short-cut to Yarkand, that it is one step in a longer route through the Karakoram and not the actual link over the Karakoram. For further discussion of this topic, see the article "Merchants and Mountains" by J. Rizvi, *The Himalayan Journal*, Vol.51, 1995. De Filippi also weighed in on the subject on pp.405–7 of his 1932 book *The Mystery Lives On*.

Chapter 15

The Return of Dr. Filippo De Filippi

Despite spending six months in the Central Karakoram in 1909 on the highly successful Duke of Abruzzi expedition, Filippo De Filippi still had more to accomplish in these mountains. He therefore organized his own expedition; this one was even heavier on science than the Duke's. De Filippi was by training a surgeon who had practiced in Bologna and Genoa. The emphasis of his medical work was physiology and biological chemistry; hence the pursuit of a scientific understanding was an integral part of his life. On the 1909 expedition, he was not only the chronicler and botanist, but he spent a considerable amount of time conducting basic scientific observations and assisting with the topographic survey. He admitted that the idea for an expedition to the region, with its main emphasis on science, occurred to him back in 1909 while on the Duke's expedition. This is reflected in the goals and itinerary which he eventually developed.

There was an additional twist to this expedition; most members of the expedition would winter over in Baltistan in order to continue with the various aspects of the scientific agenda. The expedition would commence during the summer of 1913 and carry on through the fall of 1914. Wintering over in the mountains was a new idea for a large expedition.

De Filippi's operational plan went as follows; the expedition would make its way from Kashmir over the now well-known route to Leh, then follow the Indus River up to Skardu (7,500 ft) where they would spend the winter. In the spring, the expedition would return to Ladakh and then after exploring the region around Leh, head north-northwest into the Eastern Karakoram. They would specifically explore the region of the Rimo Glacier system, which is located east of the Siachen Glacier and west of the Karakoram Pass. Melt water from the three Rimo glaciers constitute the primary source of the Shyok River, a major tributary of the Indus River. Although the Siachen Glacier had been partially explored by Longstaff in 1909 and thoroughly explored by the Workmans in 1912, no Westerner had spent time on the glaciers or peaks of the Rimo Basin or points north.

One of the major scientific components of this undertaking was to make precise measurements of gravity. This sounds very mundane, but at the time it was of considerable importance. Here is why it was important. Surveyors had known for at least half a century prior that in or near large mountain masses, such as the Karakoram, Himalaya, that a suspended plumb bob would deflect towards the mountains due to the large mass exerted by the mountains. When a surveyor set up their plane-table or

theodolite, in order to make measurements of angles and elevations, the instrument had to be level with respect to the horizon. They would know it was level when the base was perpendicular to a suspended plumb bob, which under normal circumstances would point towards the center of Earth. The mountains produced a slight deflection, which in turn produced error in elevation angles, meaning of course that the determination of the heights of mountains would be in error as well. Surveyors overcame this problem by adding a correction depending on where they were in relation to the mountains. Hence De Filippi hoped to refine the correction factors by making very accurate measurements of the pull of gravity at various locations throughout the Karakoram. This type of work had been done on the planes of northern India near the Himalayan foothills, but no work had been conducted within the mountains themselves.

He also wanted his expedition to take measurements of the strength of Earth's magnetic field. In addition, they would conduct what had become somewhat standard expedition procedure, surveys of geology, glaciology, and meteorology. If that was not enough, De Filippi added an extensive study of cultural habits and anthropological traits of various local peoples they were to encounter. Note that although the area is relatively compact, Baltistan and Ladakh are home to a host of ethnic groups. Due to the mountainous terrain and other factors, the peoples living only a few tens of miles apart often spoke different dialects and maintained distinct customs. De Filippi hoped to chronicle these cultural differences. And of course, he wanted to improve the maps of the region by conducting an extensive topographical survey as time and weather allowed.

In order to tackle this ambitious program, he had to have the right personnel, loads of scientific equipment, and some very precise instruments to measure the small deviations in the force of gravity and magnetism. When it came to personnel, he recruited university professors, a geologist, astronomer, physicists, and geographer who would join the team for various segments. The Italian Government loaned most of the scientific equipment it needed; much of it was highly specialized. For the survey work, he was 'loaned' an entire team from the Indian Trigonometrical Survey—this included the highly experienced Henry Wood and Alfred Spranger, and two Indian surveyors: Prasad and Lal.

Captain Wood had been allowed into Nepal in 1903 by the authorities so he could conduct a brief survey of the higher peaks. In 1904, he had been a member of Younghusband's Mission to Tibet, where he and a small team of surveyors were able to conduct field work along much of the Tsangpo River and southern Tibet up to the Great Himalaya. Therefore, he was extremely qualified for the job.

Most of the ethnographic work was conducted by Professor Dainelli, who as a geographer also dabbled in glaciology and geology. Giuseppe Petigax, a professional Alpine guide who had been on the 1909 expedition, was recruited to lead the team once the party reached the Rimo glaciers. The cost of an expedition of this duration and size was considerable; it was funded by private donations—in this case, the King of Italy made a contribution, as did a number of prominent Italians. A handful of universities and scientific societies made cash donations as well.

Seven Italians left their homeland in February 1913, with four additional expedition members slated to join the following spring. Men and equipment arrived in Skardu via Srinagar and Leh in late October. En route up the Indus Valley, they geologized, collecting ethnographic and anthropological data. They were in no hurry as the work on the Rimo glaciers was scheduled for the following summer. Once they had arrived in Skardu, they set up their primary winter quarters in a few humble buildings they were able to rent, located on the outskirts of the village. Meteorological and gravimetric laboratories were set up in due course. During the winter months, various members of the expedition took the opportunity to make excursions throughout Baltistan, sometimes lasting three or four weeks. Dainelli and De Filippi were in particular on the move most of the time. They conducted ethnographic studies and worked on the survey as frequently as the weather would allow.

By February 1914, the expedition had pulled out of Skardu and was making its way to Leh. The volume of equipment was so vast that they employed some 300 porters, organized into two groups which traveled several days apart. De Filippi spared no ink in his book, *Himalaya, Karakoram, and Eastern Turkestan* (1932), to describe the various cultural characteristics of the peoples the expedition encountered. He noted that the Ladakhis (Buddhists), based on what he saw of their clothing, jewelry, and housing, were “wealthier” than the Baltis (Muslims), who typically wore rags. He described the many monasteries, religious festivals they were privileged to witness, and the plethora of mani walls that they encountered (a mani wall is a man-high stone wall built with Buddhists’ prayers carved into the face of the stones). Ladakh was frequently called ‘little Tibet’ in those days, or ‘Western Tibet,’ as the inhabitants had initially migrated from Tibet proper and had lost little of their cultural heritage.

The scientists set up their various apparatuses in Leh, as this was the expedition’s new base of operation for the next several months. The study of the gravimetric and magnetic anomalies was going well, but it was labor intensive. As in Skardu, various expedition members vectored out from Leh on their own, particularly Dainelli, who was rarely in Leh. As spring gave way to early summer, plans were made for the big field campaign amongst the Rimo glaciers and surrounding peaks. The three Rimo

glaciers are the headwaters of the Shyok River, which flows south-southeast almost parallel with the other major river in this region, and the Nubra, which drains the Siachen Glacier just to the west. The Nubra flows into the Shyok, which in turn flows into the Indus just before it enters Skardu.

The most prominent geographic feature to the northeast of Leh is the Depsang Plain, a roughly 13-by-25-mile patch of barren, high-altitude 'desert,' averaging 17,000 ft in elevation ('Depsang' means 'open plateau'). Some 10 miles north is the most well-trodden of passes in the region: the Karakoram Pass (18,156 ft). Although high, it is a non-technical pass; it is non-glaciated and it is not steep as far as passes go. The main concern for travelers was the elevation and weather. It has been the main thoroughfare between northwest India and Tibet, and Chinese Turkestan, for unknown centuries—perhaps millennia. Today, there is a primitive road through the pass, but in 1914, the mode of transport was mainly on foot, although many donkeys, ponies, and Bactrian camels were used as beasts of burden. In addition, this was the epicenter of the trade between western Tibet and Chinese Turkestan with the peoples of India. Salt, borax, and wool, and sometimes Chinese goods such as silks and porcelain, moved south while rice and tea were transported northward.

The first Europeans to traverse the pass may have been the Jesuit missionaries of the 17th century, but probably not, because they tended to favor the passes well to the south. Likewise, Moorcroft and Gardnier might have made it here—they certainly knew about it—but we are not sure if they set foot on it. The first European that we know without a doubt reached the pass was Dr. Thomson, who made it the south side in 1848 but did not proceed into Tibet. The Schlagintweit brothers, Hermann and Robert, crossed the pass in July of 1856 and continued onwards to Khotan. There were several other passes to the east of the Karakoram Pass that were used by previous Europeans on their way into southern Tibet, namely the Chang- Lunga-La, but the Karakoram Pass by the mid-19th century had become the main route.

In 1911, the Government of India started to build a 'road' up the Shyok River Valley which they thought would greatly facilitate travel to and from the Karakoram Pass. This gave travelers the option to bypass the difficult Saser Pass (17,783 ft, often labeled in older accounts as 'Sasser La'). By 1914, this road was nearly completed and was put to the test by De Filippi's expedition. They found it difficult, rocky, and extremely barren, and noted that most caravans they encountered later on that summer did not use it, choosing to stick with the Saser Pass route because it offered more pasturage for animals once they had reached the Nubra Valley. (As just noted, the Saser Pass connects the Shyok Valley with

the Nubra Valley to the west. Today, there is a dirt track—road might be too good to be used in this context—up to the pass.)

The summer field season commenced on May 15 when eleven Europeans (four had come out that spring from Italy), a contingent of Indian staff, some sixty porters, and about the same number of horses and zhos (half-bred yaks), and let's not forget the 200 sheep with their shepherds, departed Leh. This menagerie was guided by a Balti named Rasul Galwan. They crossed the Chang-la (18,370 ft) in a snowstorm but then dropped down into the Shyok Valley and proceeded to the village of Shyok (12,140 ft), the northernmost habitation in the basin. From there on it was no man's land: the expedition averaged about 10 miles per day for the next seven days; the slow pace was mainly because there was little for the beast of burden to eat. As they started to approach the higher mountains, De Filippi noted that, "Not a mountain or glacier or any feature of the landscape has a name of its own, but the camping places have, as a rule, two names, Ladaki and Turki, according as it is the people from this or the other side of the Karakoram who are using the route."

They reached the Depsang Plateau without difficulty and established their summer basecamp (17,600 ft) along a rivulet. Along the 'track' across the Depsang Plateau and to the south, they found the "bones and carcasses of animals in every stage of decomposition." A testament to the harshness of weather and lack of foraging along the route. The difficulty for the caravans was that there was a ten-day stretch, north and south of the Karakoram Pass, where there was almost nothing for the animals to forage on. Fodder had to be carried by the caravans themselves. Hence the preference for most caravans to use the Saser Pass, which offers some pasturage to the west of the pass. In addition, while the expedition was camped there, many caravans and pilgrims—the majority of the latter Muslims going to and from Mecca—passed by; interestingly, few paid any attention to the expedition. A few greetings would be exchanged on occasions, but most travelers wanted to move to warmer and less windy climes as soon as possible.

The weather for the two and a half months they were encamped on the plateau and adjacent glaciers was a mixed affair; typically, there were several stormy days followed by a short period of clear skies. Fortunately, due to the perseverance of the men tasked with map making, the survey work was rarely hampered by the cloud cover. The wind, however, was ever present.

By the end of June, three field teams were formed; one was destined for the Rimo glaciers, due west of basecamp. Another team would explore the region to the west and northwest of the Karakoram

Pass. A third team would conduct geological and botanical surveys starting out to the east and northeast of basecamp, and then they were to turn their attention to the southwest. Meanwhile, a small contingent would remain at basecamp in order to conduct the gravimetric and meteorological observations.

When the Rimo team reached the terminus (16,400 ft) of the glacier, they found a 300-ft-high wall of pure white ice with a pronounced medial moraine and a low terminal moraine. This small glacier system consisted of three bodies of ice (as it does today); however, from their vantage point they could only see two—the larger is what De Filippi referred to as the 'Rimo' (today labeled as the 'Central Rimo Glacier') and the smaller as the 'South Rimo.' The South Rimo Glacier merges with its larger cousin several miles above the latter's terminus. In a few days' time, they would discover that the Central Rimo Glacier, which was about 23 miles in length, had a northern branch with its own peculiarity.

When De Filippi questioned the porters on the name of the glacier, the Baltis had no response. It did not seem to have a local name, which as De Filippi pointed out, was not uncommon in that region. We should not be surprised that this large glacier system did not have a name; although hundreds of pilgrims and merchants could glance over at the glaciers as they trekked along the path each summer, the nearest village was a five-to-six-day walk. Hence to the locals it was just another large area of barren, godforsaken ice.

So, where did the name Rimo originate? We do know that Johnson passed over the Karakoram Pass in 1865, and once back in India he seems to have deposited some topographic knowledge with the staff at the Great Trigonometrical Survey for inclusion on their maps. Johnson was the first to mention the Rimo glaciers (for which there are various spellings, including 'Rimu'). Out of curiosity, De Filippi asked the porters what the word 'Rimo' meant to them, if anything. They told him that it meant 'band' or 'streak.' De Filippi speculated that when Johnson traveled through the area and saw the glaciers off to his west, he probably asked his porters if they knew what the names were; it is possible that one of the local porters pointed in that direction and said "Rimo." Johnson thought it was the proper name of the glacier(s) when in all probability the porter was just pointing out that the ice was streaked or contained bands (medial moraines). Hence were the difficulties inherent to early travelers/explorers with the language barrier, although descriptive names constitute the bulk of the names assigned to topographic features in the Karakoram-Himalaya by the locals. In other words, the glaciers did not at that time have any local name; the porter was just commenting that, "Yes, the ice has streaks on it." In any case, the name stuck.

The glacier team proceeded up the Central Rimo, which in its lower sections displayed “a perfect thicket of needles and peaks and pinnacles and towers; masses of every size and shape, divided by narrow clefts 60–100 ft deep or more …” They suggested that these unique features were not the result of cracks and fissures (tensile force), but rather “fusion and by the erosion of the water …” By fusion, they meant compressional forces on the ice which would produce various shaped pinnacles that then could be eroded by water and melted by the sun.

As the team moved in a northerly direction, they at times trekked off the ice in an adjacent ablation valley on the left-hand side (west), and at other times they remained on the ice. Some 6 miles up the glacier, they established their own temporary basecamp where they had the porters ferry a month’s worth of food. De Filippi noted that unlike the great glaciers of the Karakoram that he had seen—the Biafo, Hispar, Baltoro, which were hemmed in by “great precipitous walls thousands of feet high …”—the Rimo system of glaciers was quite open; in other words, the surrounding peaks were not as imposing as those around the larger aforementioned glaciers. This openness gave the impression that the extent of the ice was considerably larger than it was.

A few miles north of their glacier basecamp, they came to the confluence of the North Rimo Glacier with the Central Rimo Glacier. Up until this point in time, they did not know that there was a third component to this glacial system. The decision was made to explore the North Rimo Glacier before continuing up the main ice stream. Just past the confluence, they observed something unique—the North Rimo Glacier bifurcated. Part of the ice which moved down from the upper basin flowed into the Central Rimo Glacier, and another branch flowed down to the northeast, terminating in a moderately broad but perfectly flat valley. A small river issued from the terminus of this branch of the ice.

To the reader, this may seem like a minor point to emphasize; however, as the explorers soon discovered, the confluence they were standing on was the boundary between two major watersheds. Here is what they had stumbled across: water which melted in the upper North Rimo Glacier had the potential of flowing in two completely different directions. If it happened to flow along the southern edge, it would join the Central Rimo Glacier, which as we have already seen, forms the Shyok River which then flows into the Indus River which terminates in the Arabian Sea, which is of course part of the Indian Ocean. If melt water happens to flow along the north, it will end up in the valley to the northeast, which as the expedition found out soon enough, was the headwaters of the Yarkand River, which eventually flows northwest across the Tibetan Plateau and then northeast into the Tarim Basin of Central Asia. Water from the Yarkand is used for irrigation or is absorbed back into the desert, since

there is no outlet. A few feet difference on the North Rimo Glacier meant that two water droplets could end up thousands of miles apart. Most water divides in mountainous terrain consist of a very well-defined ridge that separates the two; this divide has a significant gap in it. (The glacier in its present state still shows this bifurcation. I encourage the reader to look at it in Google Earth or some other satellite imagery; the coordinates are: 39^{o} 29’ 38” N, 77^{o} 29’ 38” E.)

The team was captivated by this unique glacier, so they immediately descended into the valley and then spent the next several days exploring it. As it turned out, the Karakoram Pass survey team conducted a thorough survey of this valley as well, which will be outlined shortly. Interestingly, De Filippi never gives the valley a name in this narrative, nor on his completed map.

With their curiosity satiated, the glacier party returned to the ice, reaching the western saddle (19,385 ft) of the North Rimo Glacier several days later. Most of the surrounding peaks were in the 19,000–21,000 ft range; although not high at all by Karakoram standards, they were significantly glaciated. From a saddle on the divide, they were able to get a partial glimpse down into the upper Siachen Basin. The most impressive sight close at hand was “a 2,000 ft high vertical wall of red rock which was topped by ice and snow cornice.”

The next item on their agenda was an excursion to the upper basin of the Central Rimo Glacier. In order to do so, they retraced their path down the North Rimo Glacier, crossed over to the Central Rimo, and then ascended the ice to its upper basin. By the time they arrived in the upper basin, the weather had reverted to one of its stormy periods. Days of heavy snowfall hindered movement, let alone the survey work. Through a rift in the clouds, they got a glimpse to the west, where a low spot on the ridge indicated where there was a saddle or broad pass of ice that linked the Rimo with the Teram Sheyr Glacier, which as we have seen is a major tributary of the Siachen.

Like most expeditions of this period, they often traveled un-roped while on the ice. It was at this time that one of the porters took a 20-ft fall into a crevasse; he ended up wedged between the narrowing sidewalls, which of course saved him from hitting the bottom. He was extricated in due course, and fortunately walked away with only minor injuries. They had been very lucky that the porter was not seriously injured or killed. They were, however, very unlucky in the fact that the heavy snowfall took its toll on the porters in general. These men suffered from the cold and resulting wetness. They could not cook their chapattis, which required a wood fire, and hence they ate less; the net result was

that they suffered even more from the cold. Reluctantly, De Filippi gave word that they were going to abandon the attempt to explore the upper Central Rimo Glacier.

When they arrived back at the junction of the Central and South Rimo glaciers several days later, the weather cleared and the new snow that had accumulated on the glacier began to melt. A number of the weakened and demoralized porters were sent back to basecamp on the Depsang Plateau and then home. The remaining porters accompanied the Italians up the South Rimo Glacier. They found an easy route up an ablation valley on the north before re-mounting the ice halfway up the glacier. The highest peaks in the region are found in a small concentration now known as the 'Rimo Group,' located between the South Rimo and Rimo glacIl—the highest being Rimo I at 24,185 ft (first ascent in 1988 by a Japanese expedition).

Unfortunately, the clear weather did nIast. The Indian surveyor Prasad was able, due to an extreme amount of patience, to accomplish some surveying during short periods of clearing in these final days. By this time, De Filippi knew the game was over, and hence the glacier party headed for basecamp on the Depsang. They had spent six weeks on the ice and had been able to complete their map, filling in the blanks that existed between the Siachen Glacier and the Karakoram Pass. In addition, they had discovered the unique North Rimo Glacier watershed which turned out to be the headwaters of the Yarkand River. De Filippi was pleased with the work that had been accomplished.

While the glacier team had been doing its work, Dainelli and one of the scientist, Marinelli, operated as yet another independent team, ventured off to look at the region's geology. In June, they had spent several weeks exploring the region to the northeast of the Depsang basecamp. I won't summarize their results, as the area lacks the interesting topography pertinent to the main thrust of this book. One point that should be discussed, however, is the abrupt change from the highly glaciated terrain to the west of the Depsang Plateau, to the relatively undulating terrain to the east. Even though this is a high-elevation region (~17,000 ft) with a few summits in the 19,000–20,000 ft range, it is unglaciated and does not even retain snow in mid-summer.

Returning to the work of the geological team, during the second half of July they redirected their survey to the upper Shyok Basin. It had been known for some decades that the Shyok River could be temporarily dammed from time to time by glaciers that advanced across the upper Shyok Valley. A lake would often form behind the ice dam only to suddenly release sometime later (typically months so),

usually generating deadly floods in the villages located downstream. There were several such flood events during the 19th century.

Dainelli and team found three glaciers that showed past evidence of having blocked the river: Great Kumdan, Little Kumdan, and the Great Ak-Tash glaciers ('Kumdan' means 'dam'). These bodies of ice are located some 10–20 miles south of the terminus of the Central Rimo Glacier. Even in 1914, the terminus of the Great Ak-Tash was stretched across the valley; the river had carved a tunnel under the terminus, otherwise it would have been dammed. The route down this part of the upper Shyok Basin was one of two options used by caravans for centuries. It was the link between the Saser Pass to the southwest and the Karakoram Pass to the northeast.

It was known from other explorers that an advance of the Little Kumdan Glacier during the winter of 1902–03 across the width of the valley created a lake which then drained later that year; the sudden release of water produced a major flood downstream. In 1905, the Great Ak-Tash Glacier advanced across the valley, but the river was able to carve a tunnel under the ice as it was doing when Dainelli and Marinelli visited it. A traveler reported in 1909 that all three glaciers were impeding the flow of the river, but no lake had formed. (See the twIticles in *The Himalayan Journal*, Vol.1, 1929: "The Shyok Dam in 1928" by Ludlow and "Indus Floods and Shyok Glaciers" by Mason regarding the history of these floods.)

While the other two teams were out in the field, the survey team, consisting of the British duo Spranger and Wood, and the Indian surveyor Shib Lal, trekked north from basecamp in order to sort out the topography lying west of the Karakoram Pass. Despite the fact that quite a few Europeans had ventured across the pass in the previous sixty years, few if any had ventured off the delineated trail of bleached bones. We know that Johnson had made some preliminary sketches of the area in 1865, while Hayward made a cursive inspection of the area in 1868. One of those who had some knowledge of the area in question was Robert Shaw (Francis Younghusband's uncle), who in 1869 crossed over the Karakoram Pass en route to Yarkand, and in the process questioned his Kirghiz escort about the local topography. The Kirghiz told Shaw that the source of the Yarkand River was over a low col to the northwest of the Karakoram Pass. Although Shaw did not visit this valley, he of course mentioned it in his own account.

Although Younghusband had pushed up part of the Shaksgam Valley in 1889, recall that his farthest point of penetration was the Urdok Glacier, many miles to the west. In addition, although

Younghusband did attempt to improve the map of his day, he was no surveyor. He was more descriptive in his accounts than anything else. As it turned out, those travelers that followed in his footsteps were confused with his descriptions of the topography of the region. As a result, in 1914 the region was still not faithfully represented on any existing map.

The survey team headed towards the Karakoram Pass but then deviated from the trail by continuing to the northwest and by accident also ended up in the valley where the terminus of the North Rimo Glacier descends. They surveyed the valley several days prior to the glacier team's own short visit. They confirmed that the small river emanating from the North Rimo Glacier was the headwaters of the Yarkand River. They also moved up a lateral valley oriented southeast-northwest, which turned out to give access to the upper Shaksgam Valley. The low pass at the end of the valley they named Shaksgam Pass (~17,600 ft). They also surveyed a short distance north of the Karakoram Pass (a part of Tibet) before returning to basecamp.

While the entire expedition was reunited at their Depsang basecamp in mid-August, news came that war had broken out in Europe. Three of the Italians were members of the military, and hence feeling a strong call of duty, left the expedition for home and an uncertain future. With the work on the south side of the Karakoram Pass completed, the remainder of the expedition prepared to move north and follow the course of the upper Yarkand River. In the process, they hoped to have the opportunity before winter weather set in of exploring the Shaksgam River Basin.

Dainelli and Marinelli left basecamp several days before the main party in order to continue with their geological and botanical surveys of the upper Yarkand. They operated as an independent team; however, at times they crossed paths with the main body of the expedition. The remaining members broke basecamp several days later. The topographic survey continued as the party made its way along the Yarkand River. They were able to penetrate the eastern Aghil Range but due to unprecedented rains over the region, and the resulting swollen rivers, they could not get into the Shaksgam Basin for exploration. They set their sights on the town of Yarkand, situated on the edge of the Taklamakan Desert, and then on to the fabled Kashgar. After a stop in Kashgar, they moved on to Tashkent and then the long road to Italy. After an absence of a year and a half, De Filippi and team arrived back in an Italy in autumn of 1914, which itself was on the cusp of declaring war.

What might we conclude regarding the work of this expedition? It was advertised as a scientific expedition of which it truly was. De Filippi's book contains a brief summary of some of the data they

collected, ranging across a wide spectrum of subjects. A number of separate books and papers were written (thirteen volumes) by the various expedition members that had conducted the research. The all-important gravimetric observations were a major success. The expedition was able to establish fourteen geophysical sites and tie them in with the Indian stations to the south and the Russian data to the north. The results of the survey work went with Wood and Spranger to the Survey of India for inclusion on their updated maps. The geologist brought back some 800 samples of fossils and minerals to be examined in detail. They also found one new genus of flora with a couple of new species for good measure. The anthropological study was able to measure some 450 volunteer subjects through the region; they concluded that the local inhabitants consisted of some six distinct people groups (one of the primary metrics was facial bone structure).

How did this expedition differ from the 1909 Duke of Abruzzi expedition? De Filippi's was even heavier on science, with mountaineering not even a minor theme. They climbed atop many ridgelines and smaller peaks in order to carry out the survey work, but no energy was spent on pure mountaineering. Recall that the Duke's expedition was a mix of science and mountaineering. In the subsequent years after the war, this expedition was highly praised for its work by a host of scientific journals, a testament to its lasting contribution.

Chapter 16

Kenneth Mason

The bulk of the explorers/surveyors we have considered so far were not professionals, the next personality we want to discuss however was a very accomplished surveyor. Kenneth Mason work for the Survey of India from 1910 through the early 1930s. He was also a founding member of the Himalayan Club, which was established in 1928 within India (Simla) in order to promote science, exploration, and sports within the country's mountainous region. In the early 1930s, Mason left India in order to accept a professorship at the University of Oxford in the Geography department. In retirement, he wrote a history of the exploration of the Karakoram-Himalaya, which was published in 1955 entitled *Abode of Snow*.

In 1926, Mason was working for the Survey of India when he undertook an officially sanctioned expedition to the Aghil Range. The primary goal was of course to conduct a survey; although the eastern periphery of the Aghil Range had already been surveyed, he wanted to expand into the core of the range and pull back the veil of darkness that shrouded this region. In addition, he hoped to be able to shed light on the topic of human occupation, had anyone ever lived here! If so, he hoped to find some material proof. And finally, there were still rumors being passed around the surveying and mountaineering communities regarding a disused pass that linked the upper Shaksgam Valley with the Karakoram in the vicinity of the Gasherbrums; he hoped to find it or be able to bury the rumor once and for all.

Before proceeding with an overview of Mason's expedition, it is time to consider the Aghil Range. The name of this small enclave of mountains has cropped up from time to time in this narrative, so it is time to expand on the theme. The range extends roughly from the Shimshal Pass in the northwest to the vicinity of the Karakoram Pass in the southwest. The southwestern border is formed by the higher peaks of the Karakoram that run along this same axis, that is just to the east of the K2-Gasherbrums-Teram Kangri group. The northeastern boundary is diffuse but stretches less than 100 miles from the southwestern border; the whole range lies south and west of the Yarkand River. The range sits at the boundary between the Pamir Plateau to the northwest and the Tibetan Plateau to the east. There are three rivers of importance within the range: the Surukwat, Zug Shaksgam, and the Shaksgam. The latter is the largest and drains the northeastern side of the Karakoram. The Shaksgam

River flows parallel to the Karakoram from the south to the north, eventually making a large turn to the east and flowing into the Yarkand River. The upper Shaksgam forms the southern boundary of the Aghil Range. The term 'Shaksgam' either means 'the box of pebbles' or 'dry pebbles' in Ladakhi, which is a dialect of Tibetan (Mason, *Geographical Journal*, Vol.69, No.4, 1927).

The highest peaks reach 21,000–22,000 ft, and despite the rain shadow effect of the Karakoram, there are still a number of sizeable glaciers occupying the flanks of these mountains. The largest glaciers, however, flow down from the northern slopes of the Karakoram barrier on the southern edge. Given the location of the Aghil Range, the question arises: is it part of the Karakoram, Kun Lun, or Trans Himalaya, since it meets at the intersection of these three ranges? Geographers and geologists differ on the answer to that question.

The Aghil Range was first brought to the attention of Europeans in 1887 when Younghusband traversed it, crossing what he called the 'Aghil Pass' (15,764 ft) during his epic trip across China to India, traversing the Karakoram en route. It was during this same expedition that Younghusband crossed the middle section of the Shaksgam River in order to gain access to the East Muztagh Pass. Two years later, Younghusband was able to spend some time exploring the upper Shaksgam River; as we have seen, he was able to get as far as the Urdok Glacier, and climb most of its length in search of the mysterious Saltoro Pass.

The next visitor that we know of was the surveyor Wood, who was part of the 1914 De Filippi expedition. In the last chapter, we saw that he found a low pass in a valley to the north of the North Rimo Glacier, which as it turned out connects the upper Yarkand River with the upper Shaksgam River. The headwaters for these two rivers are only a few miles apart.

The next explorer to make their mark on this region was Mason (1926), who of course we will examine next. Following the Mason expedition was the party sponsored by the Duke of Spoleto, who in 1929 crossed East Muztagh Pass and ventured up most of the upper Shaksgam River. They had hoped of being able to cross back over the Karakoram via some unknown pass near the southern end of the Gasherbrums, but a useable pass failed to materialize, so they had to retrace their inbound route. In 1935, the Visser expedition—who also approached the area from what is now called the 'Shaksgam Pass' just to the west of the Karakoram Pass—was able to work its way down the entire length of the upper river. This was followed in 1937 by the Shipton-Tilman-Spender-Auden team, which crossed the Karakoram via the Sarpo Laggo Pass and then set up a basecamp on the outwash plains of the Sarpo

Laggo Glacier, 15 miles north of K2. This expedition concentrated its efforts on the eastern and northeast part of the Aghil, ultimately penetrating a considerable length of the upper Zug Shaksgam River. These last three expeditions will be the subject of subsequent chapters.

Even well into the 21st century, the Aghil Range is still one of the remotest mountainous areas in Asia. If you conduct an Internet search on Aghil Range, you will only find a few entries: several historical references and possibly a couple of modern ones. To say that it is off the tourist track is a vast understatement; in fact, few Westerners have ever set foot in it. The lack of footprints in the last half-century is due to the cost of an expedition, and because it is a region that has been under dispute by India, Pakistan, and China for decades. In addition, during most of the summer it is difficult to cross the rivers which are at peak flow.

Although Mason was a skilled surveyor, he also brought along a fellow surveyor from the Survey of India by the name of Afraz Khan, who the year before had been a member of the Visser expedition to Hunza. Three India Army officers were also recruited: Clifford as doctor, Cave and Minchinton as support members. Of the three, Minchinton had some experience climbing in the Alps, New Zealand, and Himalaya; therefore, when it came to traversing glaciers, he was the *de facto* climbing leader.

Along the route from Leh to the Karakoram Pass, the expedition encountered a considerable amount of snow on the passes (Khardung, Saser), even though it was late June. After an arduous journey, they established a camp at the Shaksgam Pass on July 2. The pass is essentially a gentle saddle, the ground being littered with disintegrating limestone pebbles. There was a sizeable glacier (Upper Shaksgam) that flowed out of the mountains to the west, but the ice did not reach as far as the pass itself. Five miles downstream of the pass to the west, on the upper Shaksgam River, the party entered a mile-long gorge that was some 30–50 ft deep, and only 4–5 ft in width. Fortunately, the water level was extremely low, so they had no difficulty passing through it. Just below this gorge, the valley opened, revealing utter barrenness. Regarding this, Mason wrote, “Below (the gorge) was complete desolation, not a blade of grass, not one root of the precious burtsa which we so sorely needed.” (‘Burtsa’ is a shrub that the livestock can forage on.)

A few miles farther downstream, they came upon a 2-mile-long lake that was dammed by the terminus of the Kyagar Glacier. This glacier originates in the Apsarasas Group of mountains, which form an extended ridge on the north of the Teram Shehr Glacier (the highest peak in this group is Apsarasas I

at 23,780 ft, climbed in 1975 by a Japanese expedition). When the expedition came across it, the ice extended completely across the width of the Shaksgam Valley. Mason had had the foresight to take with him an inflatable boat in order to make river crossings; so, the team deployed this craft to cross the lake. The height of the edge of the glacier adjacent to the lake was some 300 ft. Minchinton was able to scale the side of the glacier, but when he reached the crest all he could see was an endless sea of ice pinnacles and spires; he had no idea how wide the glacier was because he could not see over the intervening pinnacles. A route through the maze of ice looked impossible.

If the expedition were to continue down-valley, a route over or around the glacier would have to be found. Mason and several others hiked up the southern wall of the valley, corresponding with the east margin of the glacier in order to get a bird's-eye view of not only the ice but the valley immediately beyond. From their vantage point, which would also be used as a survey station, it was obvious that the lowest 6 miles of ice were just a jumble of pinnacles with no practical route through it. They did spot a potential route higher up, however, so the following day they set out to see if it would be a viable crossing. After spending nine hours on the glacier, weaving their way around the pinnacles and threading through lanes of seracs, the reconnaissance team turned around without reaching the western margin. It was determined that a small group of climbers could force the route, but it was not feasible for the heavy-laden porters.

With the Kyagar Glacier ruled out, Mason then focused on finding a route along the northern flanks of the valley. Overall, the sides of the valley were too steep in this section for a simple end-run of the glacier. There was, however, a prominent geologic feature they labeled the 'Red Wall,' that extended above the terminus of the Kyagar Glacier and ran for some 8 miles to the west-northwest, that is, to the north of the Shaksgam River. They had been able to make out several gaps in the wall which might give access to the next valley to the north. After considerable debate and head-scratching, a revised plan was initiated; part of the expedition would move northward out of the Shaksgam Valley to the Lungpa-Marpo Glacier; from there, they would move north-northwest across ice and enter the next valley. Eventually, they hoped to be able to either find a route through the Red Wall (south) and drop back down into the Shaksgam Valley, or to continue west and find a side valley that would eventually connect to the Shaksgam. Part of the expedition would remain in the upper Shaksgam Valley ferrying supplies to a forward, yet-to-be-established basecamp.

Despite the on-again, off-again snowstorms, the survey of the upper Shaksgam Valley had been completed. On the negative side, there was little grass or other foliage for the ponies to eat, one had

died, and a few others were weak. Therefore, the ponies would return to the vicinity of the Shaksgam Pass, where there was at least some minimal foliage for them to graze on. After they had recovered their strength, the ponies would be led along the upper Yarkand River to the northeast (the long route) and then curve back to the west in order to join the advance party, which by then would have crossed the Lungpa-Marpo Glacier.

The climbing party made rapid progress up the Lungpa-Marpo Glacier and crossed a pass (18,500 ft) onto the Lungmo-Chhe branch of the glacier (the ice extended across the pass or saddle, forming one continuous stretch of ice but which was given two names depending on whether it is on the south or north). They descended into the valley below (Lungmo-Chhe River) and established a camp. Moving westwards, they entered what the porters named the 'Sa Lungpa' or 'valley of mud.' The weathered limestone had in time formed a thick layer of mud that covered the hillsides; Mason referred to this inhospitable place as the "acme of desolation," even more bleak than the upper Shaksgam, if that is possible.

Continuing down-valley, they entered a narrow gorge in which the muddy river raged. They were forced to hop from one large boulder to the next in order to make progress, but it became apparent that this was not going to be a viable route as long as the water remained high. From a higher vantage point, one of the expedition members was able to estimate that the gorge was at least 4 miles in length.

Mason and crew took this latest setback in their stride; such are the ways of exploration in *terra incognita*. It was now the first week of August and the weather consisted of intermittent periods of sun and clouds. Since it was not practical to climb up the sides of the valley in order to bypass the gorge, they set their efforts on exploring a side valley which veered off towards the northwest. Over the next week, they were able to work their way up-valley; it also contained several narrow gorges, which entailed endless river crossings in order to find the most feasible route. Their efforts were rewarded in the end; Mason and the surveyor Khan found themselves on a 5–7-mile plateau (17,400 ft) on which there was green vegetation and a small herd of Tibetan antelope. They christened this feature as the 'Aghil Depsang'; to the west were 20,000 ft snow-covered peaks.

They continued to trek to the west and in the process found a low pass situated atop a small saddle-shaped glacier. From the pass, which they named 'Tatar Pass' (just under 19,000 ft), they spied a deep valley which was not on any of the maps which they possessed. The allure of this "mysterious

valley," as Mason called it, was too much. Despite running low on food and fuel, the party decided to cross over the pass and at a minimum conduct a rapid exploration of the area.

The descent from Tatar Pass was on steep, loose shale, but they were able to navigate it safely. When they reached the valley floor, they had entered a virtual Eden, at least for this part of the world. There was plenty of fuel for fires, as well as green grass and blooming flowers to soften the look of the harsh landscape. The valley consisted of reddish sandstone interspersed with black and red conglomerate. Initially, they gave the valley the name 'Kalmuk Lungpa,' but later changed it, as we will see below.

It was now the third week of August and the rivers were at peak flow; a route up or down the valley was out of the question for the extremely tired party, who had been subsisting on limited food. Mason had convinced himself that this valley was a part of the Shaksgam; he had a copy of Younghusband's description of the area when the latter passed through it in 1889—Mason even thought he recognized several camping spots as described by Younghusband. As it turned out later, the Kalmuk Lungpa Valley is separate from the Shaksgam Valley, hence Mason changed the name to 'Zug-Shaksgam', with the term 'zug' meaning 'false.' The river flows northward from where they camped and after approximately 12 miles merges with the Yarkand River. The headwaters of the Zug-Shaksgam River lie on the northern ridge of mountains that separates it from the Shaksgam River, just north from where the Gasherbrum and Urdok glaciers descend into the valley. The highest peak in the upper Zug-Shaksgam Basin is Kaimuk Kangri (22,808 ft; no known ascents).

With the way forward barred, winter approaching, and supplies beyond exhausted, the expedition turned for home. The return trek had its own difficulties; they had to endure a major blizzard, and one of the porters was hit on the head by a falling rock and had to be carried on a stretcher for a number of days. However, by early October, the expedition had returned to Baltistan with all its members, minus a number of ponies that had succumbed to the elements and extreme workload.

This expedition had its share of logistical troubles; the main culprit was the high water in most of the larger streams and rivers due to snow and ice melt. This, as we saw, had limited their movements; in steep terrain, high water is a major obstacle, since it is difficult or impossible to bypass it. On the positive side, the porters had done all that they had been asked to do and more. Although the weather had varied from sunny to stormy, with a significant number of days where surveying was not possible, by the conclusion of the expedition, a large amount of survey work had been undertaken. The map

produced had cleared up some of the geographic issues left unresolved by the 1914 map of the De Filippi expedition. This expedition also used stereo-photographic methods to determine contour lines for their map. This method used two photographs taken of roughly the same subject but taken at two different locations; those locations had to be surveyed precisely and the distance between the two points measured accurately.

The Zug-Shaksgam River had been discovered, although its northward reach—the stretch just before it enters the Yarkand River—remained to be mapped. They also observed late that summer that the Kyagar Glacier-dammed Lake had extended 2 1/2 miles farther upstream, doubling its length from when they had first observed it. They also found many former strandlines, that is horizontal marks in the surrounding mud, which indicated high water levels in previous years. It was obvious that in years past the lake had been considerably larger and deeper than it currently was.

Mason, in his written account of the expedition, suggested that the Karakoram Pass is a part of the Aghil Range and should not be considered part of the Karakoram Range at all. He argued that on a line extending from the Saser Pass, north-northwest to the Aghil Depsang, demarcates a major change in climate and geology. The climate is significantly drier to the northeast of that line, the glaciers smaller; there are even different mammals and birds present. In addition, the rocks to the northeast of this line are more sedimentary and less igneous in origin, the mountains more rounded; in essence, it is more Tibetan in nature. Despite his prominence within the Survey of India, Mason's suggestions were never acted on. The eastern boundary of the Karakoram remains nebulous even today. Although Mason noted that the Aghil Range is not part of the Karakoram Range, he did not suggest that it be included in either the Trans-Himalaya or Kun Lun ranges.

It was stated at the beginning of this chapter that two of the expedition's objectives were to find traces of human habitation and locate or dismiss the rumor that another pass over the main barrier of the Karakoram existed. In the end, the expedition found no evidence that any humans had every lived in this desolate region. Secondly, they were able to conclude, almost positively, but not absolutely, that there was no additional viable route over the Karakoram into the Shaksgam Valley. There were difficult mountaineering routes, as pointed out by the Workmans fourteen years earlier, but nothing that would be viable for locals and their pack animals given the current state of the ice.

Chapter 17

The Dutch Connection

After the British, the Italians were the second-most active nationality when it came to exploring the Karakoram and Western Himalaya in those early decades of the 20th century. After those two, it was a smattering of nationalities that took part. The Dutch, not known for their mountaineering prowess, entered the picture in 1922 when husband and wife team of Philip and Jenny Visser led an expedition into the Saser Range of the Eastern Karakoram. They returned in 1925 with the objective of exploring the Hunza region; this was followed up in 1929–30 with another effort into the Eastern Karakoram and Trans-Himalaya. In 1935, they concentrated their efforts in the upper Shyok Valley of Baltistan before moving northeast into the Shaksgam River and Aghil Range.

Philip was a career diplomat. In 1931, he was appointed as the Dutch representative to India, but after his last expedition in 1935, he went on to become the Dutch Ambassador to Turkey. This was followed by a posting in South Africa, and later he closed out his diplomatic career in the USSR.

Both Philip and Jenny had only modest mountaineering experience prior to the 1922 expedition. They had traveled throughout the Alps and in the Caucasus, but it is unclear how they developed an interest in the Karakoram-Himalaya. In this chapter, I will summarize their Hunza expedition, followed by the second Eastern Karakoram expedition. Their 1935 expedition is difficult to untangle, as the only detailed account exists in Dutch.

Prior to the 1925 Visser expedition to Hunza, parts of the region had been surveyed, but there remained large tracks that had not been explored in any detail, especially in the north. The path between Gilgit and Hunza, which continued up to the Khunjerab Pass and Chinese Turkestan beyond, followed the Hunza River (today it is a two-laned paved road, with the glorious title of 'The Karakoram Highway.' It was built by the Chinese in the 1970s and 1980s. The authorities on both sides of the border started to allow tourists to cross over to China in 1986, the opportunity for which my wife and I took advantage of). By the time the Vissers arrived on the scene, the track through Hunza had seen its fair share of Europeans, but few took the time to venture into the various side valleys.

Recall that Younghusband had ventured there in 1889, while the Conway expedition of 1892, and several Russian explorers, had ventured along the Hunza River during this same period. The primary surveying effort in the region occurred in late 1892, and then again in the summer of 1893 by Lt. George

Cockerill. He was sent out by the Survey of India. He trekked up the Hunza River from Gilgit and then ventured off to the Shimshal Valley, spending some time in Shimshal Village and then traveling up to the Shimshal Pass. Later, he worked his way up the Khunjerab, Mintaka, and Kilik passes, surveying as he went.

The 1908 Workman expedition had traversed a small part of Hunza to gain access to the Hispar Glacier; nevertheless, there was a considerable amount of terrain that no outsider had laid eyes on. Hunza had essentially been playing second fiddle to the Central Karakoram, which lies just to the south. Therefore, it was time that this compact region with some amazing terrain of its own should receive a thorough topographic examination.

The 1925 Visser expedition was a scientific expedition to the core, as stated in the book *Among the Kara-Korum Glaciers in 1925*, written by Jenny Visser. Philip would lead the effort in the areas of meteorology and geology. His wife would study the botany of the region, while the Baron B. Ph. Van Harinxma Slooten would look into matters concerning zoology. Prior to the expedition, a Professor Magnus from the University of Utrecht had set up a series of experiments where he measured various team members' physiology. Experiments were conducted in a pressure chamber and in an unpressurized airplane. Although Professor Magnus did not accompany the Visser's, the idea was to repeat these experiments once they were at altitude in the Karakoram, and on their return to the Netherlands compare the results. Rounding out the European contingent were two Swiss mountain guides: Franz Lochmatter and Johann Perran.

Since surveying and the production of a map was also one of the primary objectives, the Survey of India loaned one of its best men to the expedition: Afraz Khan—the one and the same who was on the Mason expedition noted in the previous chapter. One of the main survey goals was the mapping of the Batura Glacier and surrounding summits, which was nothing more than a white expanse on the existing map.

The expedition departed Srinagar in late April of 1925, making its way to Gilgit in good order despite the deep snow on the intervening passes. Their route followed the Hunza River as it snaked its way through the region; the expedition ultimately set up its basecamp in the village of Pasu. (Map 10). The Hunza River on this stretch runs north to south while four glaciers reach the edge of the valley from the west. The largest body of ice is the Batura Glacier, with the second-largest being the Pasu Glacier—the latter being where the team commenced its work. Both glaciers emanate from the eastern slopes of

an extensive northwest-southeast-oriented ridge which contains a large number of 23,000 ft peaks, sometimes referred to as the 'Batura Muztagh.' To the east of this part of the Hunza Valley, the glaciers are small compared to their cousins to the west. Nevertheless, there is an impressive ridge of granite needles on the east which adds drama to the scenery.

In early June, the expedition ventured up the 16-mile-long Pasu Glacier, which drains the northeast side of the pyramid-shaped peak of Shispare (24,970 ft, first ascent 1974 by a Polish-German expedition). Unfortunately, they found the snow in the upper basin was still very deep and the valley sidewalls were shedding avalanches with considerable rapidity. Despite intermittent snowstorms, some survey work was accomplished; they found that the glacier was 4 miles longer than indicated on the most current map. After this short reconnaissance, they returned to their basecamp on the Hunza River.

Putting the exploration of the Batura Basin on hold due to the snow conditions, the expedition then proceeded northward into the Khunjerab Valley. At this time of the year, the river crossings were dangerous to say the least, and at times suicidal. Many of the river valleys alternate between wide expanses of fluvial deposits and narrow canyons. If a party was able to successfully cross a river at a given time in one of the narrow canyons, there was always a chance that the water would be too high a short time later, necessitating a serious climb above the canyon or long detour that may take days to complete.

As the expedition—which now numbered forty-nine persons and one sheep named Pete—moved up the main valley towards the Khunjerab Pass, they had to ford the river multiple times; each ford became more difficult. Four days after departing Pasu, they came to the entrance of the Bara Khun Valley, which veers to the northeast. Philip and one of the guides made a two-day foray into this valley, where they discovered a 5-mile-long glacier (Parpik) which was not indicated on any map. They climbed along the side of the glacier and made for a col at 18,000 ft (unnamed), from which they looked down into what they called 'Chinese Turkestan' (eastern extremity of the Pamir Plateau).

Once the team was reunited back in the Khunjerab Valley, it was obvious that they could not return the way that they had come due to high water in the river. Hence, they were now forced to seek an alternative route back to their basecamp at Pasu. Their only realistic course of action was to continue up-valley (eastwards) and then trek to the south while looking for a route back to the west. In the process, they made a quick excursion to the Khunjerab Pass (15,397 ft); this was the main route ('mail route') between Gilgit and Kashgar, when water levels allowed of course.

One of the expedition's guides was from the Shimshal (they spell it as 'Shingshal') area, and fortunately he was able to lead them south via the upper Gujerab Valley. They found the upper Gujerab Valley more expansive and drier than the Khunjerab Valley but "quite charming." They came across several small settlements, which even for this part of the world was considered remote. They kept on a southerly course—crossing several 17,000 ft-high passes—and finally emerged in the east-west-oriented Shimshal Valley, but only after two narrow escapes from rock avalanches. The detour had not been a waste of time nor energy; they had been able to determine the sources of the Khunjerab and Gujerab rivers as well as determine the exact position of the primary Karakoram watershed (international border). In other words, the survey work was off to a grand start, in part due to the excellent weather.

They were not the first Westerners to visit this particular part of the Shimshal Valley, as some thirty years prior, Brigadier-General George Cockerril had ventured up there in order to conduct his survey. The village of Shimshal (~10,000 ft) lies 11 miles north-northeast of the summit of Disteghil Sar. The track to the Shimshal Pass, which Younghusband reached in 1889 from the east, lies up a side valley which has its entrance several miles east of the village. The distance between the pass and the village is about 15 miles; recall that Younghusband only ventured a mile or two west of the pass, and therefore he was never in or near the village of Shimshal.

The Visser expedition used this unscheduled opportunity to venture to the source of the Shimshal River, which from the village meanders to the southeast. As the expedition proceeded upriver, it was forced to cross the terminus of the Yazghil Glacier. This body of ice lies in a side valley but at that time it had advanced across the width of the Shimshal Valley; it took the expedition an hour and a half to cross the terminus. Two miles farther up the valley and they came to the terminus of the massive Khurdopin Glacier, which also stretched across the width of the valley. They estimated the length of the Khurdopin at 32 miles (they trekked up most of the way over the following days); in actuality, there are a handful of tributary glaciers that make up this glacial system. The upper basin borders Snow Lake, while the Khurdopin flows to the north. The highest summit in the immediate area is Kanjut Sar at 25,459 ft (first ascent 1960, by an Italian expedition).

Further up the Shimshal Valley, they came to the Virjerab Glacier, which they estimated to be 26 miles long, nestled between the Khurdopin Glacier to the west and the Braldu Glacier to the east. The entire surface of the ice was covered in rock—difficult to walk on and not pleasant to the eyes. In fact, Jenny Visser said, "… it was ugly, desolate and dreary to the extreme." They managed to cover three-quarters of its length before calling it quits. Between the termini of the Virjerab and Khurdopin glaciers

was a glacier-dammed lake which showed evidence of being at least 300 ft deeper in the past (it was dammed by the eastern margin of the Khurdopin Glacier). Over time, the river had been able to cave a channel under the ice and hence the level of the lake was significantly lower than it could have been. If and when this lake was to suddenly release, it would create a flash flood of great magnitude on the Shimshal and Hunza rivers.

On the return trek down-valley, they decided to give a closer look at the Yazghil Glacier. The upper reaches of this 23-mile-long body of ice lies adjacent to the eastern flank of Disteghil Sar (25,869 ft, first ascent 1960 by an Austrian expedition). The expedition ascended into the upper basin via the east side of the ice, but clouds and fresh, unconsolidated snow put a stop to further exploration. The ice of the Yazghil was devoid of supraglacial moraines, making it one of the loveliest they had seen in the Karakoram to date.

As food supplies were by now running low, and since there was little in the way of a local food source, the Vissers decided to head west following the Shimshal River back to Hunza and then on to Pasu. En route, however, the call of the Malangutti Glacier was too strong for the team to resist. They spent three days moving up (southward) the ice to the base of Disteghil Sar (they refer to it as 'Datso Ghil'). However, due to fresh snowfall, the party retreated before reaching the upper basin. The only thing left was for the expedition to set its sights on the Hunza Valley once again. They departed Shimshal on August 15 and traveled down-valley some 10 miles before taking a track to the north over the bleak Karun Pir Pass (15,932 ft). They reached Pasu several days later.

Their next objective, which was the core of the expedition, was to push up the 36-mile-long Batura Glacier as far as conditions allowed. This was the first expedition to venture onto its ice; in fact, the Mir of Hunza told the Vissers that it was impossible to go farther than about 10 miles upstream from the terminus. In 1925, the terminus of the Batura was lying within the Hunza Valley at an elevation of approximately 8,000 ft, which was exceptionally low for any glacier in the Karakoram-Himalaya. As noted above, the Batura and its tributary glaciers lie to the east of a 25-mile-long northeast-southwest-oriented Batura Muztagh, which is dotted with numerous peaks in the 23,000 ft range. The southeastern part of the ridge is anchored by an impressive fang of rock known as 'Ultar Sar' (24,239 ft, first and second ascents in 1996 by two Japanese expeditions) which towers above the prominent village of Karimabad. (You cannot see the summit of Ultar from Karimabad; you have to proceed south to Nagar—believe me when I say it is worth the effort.)

Since the lower part of the Batura Glacier was extremely fractured, the expedition made its way westwards by commencing its trek on the Pasu Glacier. By trekking several miles up the north side of the ice, and then traversing a gentle ridge separating the two bodies of ice, they were able to gain access to the Batura with less difficulty than an all-out frontal assault on the terminus of the Batura would have entailed. Over the next day and a half, they worked their way up-glacier by following a path through an ablation valley located along the southern margin of the ice. They noted that for the first 20 miles, the ice was nearly flat—an elevation differential of only 2,000 ft over that distance. The surface was so flat, or nearly flat, that they came across several supraglacial streams that were flowing up-glacier for short distances instead of down-glacier.

When it was time to traverse the Batura, they found themselves entangled in the midst of a massive crevasse field. Once they had extricated themselves from the crevasse field and crossed the ice, they continued upwards via the north side ablation valley. The next day, they set up a basecamp in a peaceful alp full of flowers some 12 miles above the terminus. While Jenny and several of the porters stayed at basecamp, Philip, the guides, and the remaining porters pushed onwards to the upper basin. The ablation valley had run its course, so the party was forced out onto the ice; it was slow-going, as the ice here consisted of a series of pinnacles and hollows. On the third day out from basecamp, they were hit with a storm and along with it a significant amount of fresh snow, which of course slowed the party down even more. By now, the porters were starting to voice numerous complaints.

As a result, most of the porters were sent back to basecamp while the guides and Philip made an attempt on the ridge which encompassed the upper basin. Up until now, the orientation of the glacier had been east-west, but here it made an abrupt turn to the north. The survey team pushed its way up the southern slope towards the crest of the ridge, which was covered with deep fresh snow. They managed to reach 17,100 ft, several hundred feet below the crest, before giving up; the steepening slope was beyond what they could cope with. They made the slog back to basecamp in one and a half long days.

While the climbing team had been up-glacier, a contingent of porters had been sent back to Pasu for additional supplies. As a result, when the climbers returned from the upper basin, there was plenty of food and fuel on-hand for additional exploration. The Vissers decided on a new plan of action—they would head north up the Lunpghar Valley in hopes of finding a pass from which they could descend into the Chapursan River Valley from whence they could work their way back to Pasu. One of

the guides with a porter made a quick reconnoiter of the route before the whole expedition moved forward. The weather had been alternating between brilliant sunny days and snowstorms.

The guide made a dash for the pass at the northern end of this north-south-oriented tributary valley, which joined the Batura Glacier some 20 miles upstream of its terminus. The south side of the pass was an easy trek; once on the pass, however, it was readily apparent that the descent of the north side would be difficult—the porters would have to be lowered on the ropes with a significant amount of step cutting thrown in. Once the Vissers had learned from the guide the difficulty of their proposed route, they abandoned the revised exit plan, hence the expedition retraced its collective steps back down the Batura and Pasu glaciers. In total, the expedition spent twenty days on the glacier and were able to survey a large portion of the basin; the weather was sufficiently good to allow them to map the upper basin as well. In all likelihood, they were the first humans to set foot on the upper Batura.

By the time they returned to Pasu, it was mid-September. Remembering that they had to trek across several high passes to get back to Srinagar, the Vissers started to make arrangements for the expedition's departure. However, the allure of the area directly south of Disteghil Sar was too much for them to bypass; they knew that they had to seize the opportunity while it was possible. Therefore, they trekked up to the lower Hispar Glacier and made a left turn at the first tributary glacier that enters from the north—the Kunyang. They navigated their way northward for two days but once again the survey was thwarted by storms. They did get a brief overview of the area when they summited a small peak positioned along the side of the glacier, confirming some of the geography around Disteghil Sar they had observed earlier in the summer. They returned to Srinagar on October 30, none too soon as the passes already had a mantle of deep snow.

This expedition had trekked an estimated 1,250 miles, and was able to add some ink to the blank spaces on pre-existing maps. They made precise measurements of the positions of various glacier termini in order that future expeditions could make comparisons. Some of their own observations were compared with early ones; they found that two of the glaciers that had been surveyed by the Geological Survey of India had retreated over the intervening years. Various physiological tests had been conducted on expedition members throughout the trek, although the results were not included in their book.

On January 4, 2010, a massive rock slide occurred on the north side of the Hunza Valley at the village of Attabad, located between the communities of Karimabad and Pasu. The rock and dirt blocked

the Hunza River, forcing a large lake to form behind the slide. Some twenty people were killed and a large part of the village of Attabad was swept downhill by the slide. By early that summer, the water level in the lake had topped the natural dam, which had also been leveled by engineers; however, the lake remains and is now called 'Attabad Lake.' The Karakoram Highway had to be rerouted and a number of villages upstream were flooded. Before minor excavation, the top of the dam was 410 ft deep and about 1 ¼-mile long. Post-slide research suggests that water from agricultural use on the fields of Attabad, which is some 1,500–2,000 ft above the riverbed, was a significant factor in the creation of the slide. This is a reminder that geologic forces are of course still in play in the region, an obvious fact that we often overlook when studying the history of a region.

The Eastern Karakoram and Turkestan

Spanning the years 1929–30, Philip Visser led another expedition; this one had all of the usually scientific aims but the primary surveying objective was to clarify the geography of two regions of the Eastern Karakoram: the region which lies to the south-southeast of the Siachen Glacier, as well as the 'tableland' lying east of the Karakoram Pass. Although Visser referred to the first region as the 'Saltoro,' today it is considered part of the Saser Muztagh, well south of the Saltoro Muztagh. Recall that 'muztagh' refers to a collection or subrange of mountains within a larger range. This region is essentially the eastern termination of the higher peaks of the Karakoram; from the Siachen Glacier, the range arcs to the south-southeast. Even though the well-traveled route through the Saser Pass lies here, the region's side valleys and glaciers had seen little traffic prior to this expedition. Longstaff and Dr. Neve had trekked through the area in 1909 but there was still a lot of topography that needed to be surveyed and then brought into agreement with the existing maps. Even though the area lies close to towns and villages of Ladakh, it had been overlooked until now.

Unsurprisingly, the expedition roster consisted of some repeats from earlier Visser expeditions: Jenny Visser would look into matters of botany, Sillem would cover zoology, Dr. Wyss was the geologist, with Franz Lochmatter returning as mountain guide. The survey work was handled once again by Afraz Khan but assisted by another Indian surveyor, M. Akram.

In May of 1929, the expedition departed Srinagar en route to Leh. From Leh, a total of 435 porter loads were transported to the expedition's basecamp that was being established in the Nubra Valley. This valley is oriented along a northwest-southeast axis and contains the Nubra River, which

emanates from the terminus of the Siachen Glacier. Halfway up this valley from its entrance in the south, a major tributary valley leads off to the east which was for centuries an important route from Baltistan to Tibet—this is the Saser Pass, which eventually gives travelers access to the Karakoram Pass.

Venturing from their basecamp, Philip and the geologist Dr. Wyss first explored the La Yoghma Glacier, which occupies one of the many side valleys which branches off from the western side of the much larger Nubra Valley. The upper basin of this glacier is situated on the eastern slope of the highest peak in the immediate area: La Yoghma Ri (22,401 ft, no known ascents). They found that this region is choked with countless granite spires and arêtes. Their next stop was the Shelkar Chorten and Terong glaciers located a few miles east of the terminus of the Siachen Glacier. The area has no high summits but is encompassed by many peaks in the 20,000 ft range. After a close escape from a massive rockfall, the party was able to reach a vantage point from which they could see that the upper basin of the Terong Glacier was connected with a large, relatively flat body of ice and snow (unnamed today, but essentially an icefield) that appeared to be the source of a handful of large glaciers that radiated in all cardinal directions.

Their next objective was the environs of the Saser Pass (17,480 ft, 'yellow ground'). The valley in which this pass is located did at that time contain a small glacier; with regard to the pass itself, Philip noted that "the highest point forms a scarcely noticeable curve in the valley." The area directly to the north is dominated by Mamostang Kangri (24,659 ft, first ascent in 1984 by an Indo-Japanese expedition) and to the south by Saser Kangri I (25,170 ft, first ascent in 1973 by an Indo-Tibetan expedition). These massive summits are relatively unknown even to this day, in part due to the fact that since 1984, they have lain in the 'zone of control,' which is essentially the war zone between Pakistan and India, part of the greater Siachen Glacier conflict. In reality, Saser Kangri I is the highest of a series of seven peaks in a compact area that rises above 23,000 ft.

The team then proceeded eastwards across the pass, descending into the upper Shyok River Basin. They entered the first valley on the east and proceeded up the East Chamshen Glacier towards the base of Saser Kangri I. They were now face to face with the peaks' imposing 7,000-ft-high east wall. It was getting late in the season, so Philip decided to leave some unfinished surveying in the area until the following summer. His decision was made in order that they could move their base of operation northward towards the Karakoram Pass; there was survey work here that they wanted to accomplish before the autumn temperatures turned too cold.

After departing the Shyok Valley, they proceeded over the Karakoram Pass and spent several weeks surveying the area to the east and northeast of the pass (in Tibet). They found this region rich in fossils; in addition, they came across both fresh and saltwater lakes. Most of the rounded peaks ran in parallel ranges; the average elevation of the area was on the order of 17,000 ft.

Once this part of the program had been completed, they made their way to Yarkand and then to Kashgar, where they spent the winter. Early in the spring of 1930, the expedition retraced its route back over the Karakoram Pass and finished up by exploring several more of the valleys located east of Saser Peak. Over the course of the next several weeks, various small teams explored additional glaciated valleys that emanated from the eastern slopes of Saser Peak. These glaciers have imposing names such as the 'Sultan Chhushku' and 'North Shukpa Kunchang'; the former was exceedingly broken, giving the ice axe of Lochmatter a major workout as he spent one and a half days chopping steps so the fourteen porters could follow. The Vissers also learned that during the previous summer (mid-August), shortly after they had traversed the Karakoram Pass, a lake which had formed on the upper Shyok River behind the advancing ice of the Chong Kumdun Glacier had released. A massive flood had created havoc downstream. The lake had been measured at over 11 miles in length when it burst, releasing an estimated 356 billion gallons of water (that is enough water to fill 540,000 Olympic-size swimming pools).

By mid-August, this successful expedition had returned to Srinagar. Their main accomplishment had been the mapping of the area to the east of the terminus of the Siachen Glacier as well as the Saser Muztagh.

Shaksgam-Aghil

The primary objective of the 1935 Visser expedition was the Shaksgam River of the Aghil Range, but en route they were going to visit some of the side valleys of the upper Shyok River, which had not yet been explored. They reached the Shaksgam River via the Shaksgam Pass located just north of the terminus of the North Rimo Glacier, surveyed by De Filippi's 1914 expedition ('Pass G' as labeled on their map) and Mason's 1926 expedition. The Vissers and team followed the Shaksgam River downstream to the Kyagar Glacier. The glacier-dammed lake impounded by the glacier, first surveyed by the Mason expedition, had expanded in size over the nine intervening years. Although the lake had expanded, the lower part of the glacier that extended into the Shaksgam Valley had thinned. However, the valley walls were steep, so

after a multiday reconnaissance of the lower Kyagar Glacier, it took the expedition three days to find a practical route through the torturous ice.

Once clear of the ice, they continued down the valley over the Singhi, Staghar, and Urdok glaciers, noting that all of these bodies of ice were showing evidence of thinning. They returned via the same route, which involved crossing and re-crossing the high-volume Shaksgam River. They were forced to make considerable deviations from the valley in order to surmount the various obstacles. Nevertheless, it did complete the survey of the upper half of the Shaksgam Basin.

Thus ended the expedition life of the Vissers; over the years, they had made a significant contribution to the geographic understanding of the Karakoram, but they also expanded the botany and geology of the regions they visited. In addition, their expeditions added to the understanding of human high-altitude physiology; by the mid-1930s, many disparate pieces of research were starting to come together to form a comprehensive theory. It is one of those quirks of history that the Vissers are not remembered today to the degree that their accomplishments bear witness.

Chapter 18

Another Italian Duke Enters the Karakoram

Twenty years after the Duke of Abruzzi had ventured up the Baltoro Glacier and cast a mountaineer's eye on the hulk of K2, his twenty-nine-year-old nephew, Prince Aimone, the Duke of Spoleto, followed suit. This was another very large expedition that had multiple objectives: to climb K2, conduct geological studies as well as refine the maps of the region, and identify and collect flora and fauna that had been missed by any of the earlier expeditions; at least that was the initial plan in early 1928. With the hindsight of previous parties, a small team of Italians made a reconnaissance trip to Askole, near the terminus of the Baltoro Glacier, during the summer of 1928 in order to transport a large amount of gear that would be needed when the full force of the expedition went into the field in 1929. This party left Srinagar with some 200 laden ponies, estimated to be somewhere on the order of 18 tons. This mass of material was left in Askole in several rented huts to be retrieved the following summer.

While the reconnaissance party had been in Baltistan squirreling away its gear, back in Italy, the oversight committee for the expedition decided to change the objectives. The attempt on K2 had been cut from the program; this expedition was now all about science. We are not told in the Duke's official report of the expedition why the committee decided to cut out the attempt of K2. Speculation suggests that since the Duke had little climbing experience, the committee felt that as patron of the expedition, sticking to a scientific agenda would better suit his strengths. Even though K2 was out, and science was in, there was no lack of willing participants. Twelve Italians ended up on the expeditions roster; besides the Duke, the most noteworthy was Professor Ardito Desio, a well-respected geologist. Desio would go on to lead the 1954 Italian expedition which would be the first to leave boot prints on the summit of K2.

Despite the previous summer's advance transport of gear, by March 1929—with the full expedition descending on Srinagar—some 600 loads still had to be moved towards the Baltoro Glacier. This massive movement of men and material was accomplished by subdividing into three independent teams for the trek to Askole. By late April, all was ready for the push onto the ice. Basecamp was established at Concordia in due course. Professor Desio led a team up the Muztagh Glacier over the East Muztagh Pass and down the Sarpo Laggo Glacier. This team was headed for the Shaksgam River Valley intent on exploring the middle section. They hoped to be able to return to the Baltoro Glacier via a yet-to-be identified pass east of K2 that would cut through the Gasherbrum Range. The old stories of a Saltoro Pass across this part of the Karakoram would not die easily!

The ascent of East Muztagh Pass and the descent to the Shaksgam River went according to plan. By the third week of June, the team reached the Gasherbrum Glacier which at that time stretched across the valley. They climbed onto the terminus of the glacier and made an uneventful traverse before continuing their trek up-valley; they reached the edge of the Urdok Glacier the next day. They were able to ascend most of the length of the Urdok, reaching the base of a steep avalanche-prone wall which contained Indira Col, and the Siachen Glacier to the south. However, a fresh snowfall caused them to return to the Shaksgam Valley without making an attempt on Indira Col. At this point, the team subdivided into two parties; one party retraced its steps to the Baltoro via the Sarpo Laggo Glacier, while the other containing Professor Desio continued to work its way up the Shaksgam Valley. As it turned out, most of the exposed rock in the Shaksgam Valley consisted of limestone, in which they found many well-preserved fossils.

Professor Desio's team had to navigate across several smaller glaciers, which they named the 'Stagar' and 'Singye' (this was prior to the Vissers' 1935 expedition) in order to proceed up-valley (eastwards). They made it up-valley as far as the Kyagar Glacier, which had been reached by the Mason expedition on their down-valley explorations. By this juncture, the team had seen enough of the imposing wall of mountains to their south, the Gasherbrums, that they gave up any idea of a shortcut to the Baltoro Glacier. Their only recourse was to follow their inward track. This took some sixteen days, but by mid-July, the entire expedition was reunited on the Baltoro Glacier.

Meanwhile, the Duke, who had taken ill when the expedition first pushed up the Baltoro, had recovered; he was now making plans to trek into the upper Baltoro Basin. First, however, while camping at Concordia, the team spent six days confined to their camp because of a massive snowstorm. After the storm, it took them three days to work their way up into the upper Baltoro Basin; at times the Europeans were traveling on skis. One objective that had caught the attention of the Duke was a saddle located at the head of the Abruzzi Glacier (east of Baltoro Kangri Massif).

The party reached the saddle without difficulty and spent one night camped on it (around 20,000 ft as estimated by the Duke). They were able to conduct some survey work between the intermittent cloud cover. They named this feature the 'Conway Saddle' after the intrepid explorer who was the first to venture up the entire length of the Baltoro Glacier in 1892 (the name remains to this day). From the Conway Saddle (19,596 ft), the climbers could see another saddle to their east which was only a few miles away but looked impossible to ascend from the west; this was due to the glacier, which at its base was nothing but a jumble of ice towers. What feature they were looking at is not named on

any maps that I could find; however, it is located southwest of Sia Kangri and due west of Mt. Hardinge. Satellite imagery does show a pass in this location which connects the upper Kondus Glacier with the upper Hardinge Glacier. This is most likely the same pass that the senior surveyor on the Workmans' 1912 expedition, a Mr. Peterkin, reached via the Hardinge Glacier. Recall that Peterkin and his small party did not attempt to downclimb this pass, but rather retraced its inbound route on the Hardinge Glacier. The Duke's party then returned to their basecamp on the Baltoro and from there they descended to Askole.

After Professor Desio had returned to the lower Baltoro Glacier, and while the Duke's party was in the upper basin, the professor set out to explore a number of the valleys and glaciers on the north side of the basin. They ventured up the Punmah, Nobundi Sobundi, Chiring, and Choktoi glaciers, surveying as they went. By early September, the entire expedition had returned to Srinagar without any mishaps.

The tangible results of this scientific expedition are as follows: the team conducted many magnetic and gravimetric observations as they ventured forth. They were able to collect some 20,000 specimens of fauna and roughly 2,000 of flora. They also collected numerous water samples from which they were able to study the plankton and benthos. Professor Desio extended the geologic study of the region while additional anthropological measurements were taken in order to complement those taken during two previous Italian expeditions. Although most of the ground covered by this expedition had been trodden previously, they were able to refine the results of their forebears. In addition, this expedition did make good use of skis at higher elevations, even on some gradual ascents.

Re-Enter Professor Dainelli

The name Professor Giotto Dainelli might be familiar at this juncture; he was the geologist on De Filippi's 1913–14 Karakoram expedition. One of his former students was Professor Desio, who as we just discussed, was the geologist on the Duke of Spoleto expedition. The established objectives on this small 1930 expedition, as stated by the professor, were broad: he wanted to explore the connection between the Siachen and Rimo glaciers, to have a look at the geology of the Nubra Valley; in addition, he wanted to continue some of the anthropometrical measurements of the local inhabitants, which he had commenced in 1914. He would also dabble in botany and meteorology as time permitted.

This expedition was small because besides the professor, the only other Europeans were a Miss Ellen Kalau, a skier who also had some climbing experience in the Alps. She greatly assisted in logistics and was in charge of botany. Professor Desio had originally signed on as a participant, but his work in Italy kept him from going at the last minute. The bulk of the cost was borne by Professor Dainelli. Another important figure who signed on once the expedition had reached the Karakoram was Hashmatullah Khan, a local dignitary from Ladakh who the professor had known for decades.

The expedition departed Srinagar in early May and had reached the terminus of the Siachen Glacier in early June with 6 ½ tons of gear and seventy porters. Recall that typically the route up the Nubra River to the terminus of the Siachen Glacier was not used because of the dangers of numerous river crossings. The professor's expedition was able to use this particular route because it was early enough in the season that the Nubra River could still be forded without undue risk. Over the next fifteen days, a contingency of porters advanced the expedition up the ice.

Dainelli established his basecamp at the confluence of the Teram Shehr Glacier with the Siachen Glacier. Despite the altitude and the fact that the area was surrounded by ice, the unglaciated area around basecamp was a hotspot for flora; its isolation made for some interesting specimens. Primulas were the most common wildflower, but forget-me-nots were not far behind. Due to the short growing season, various flower species came and went in considerable rapidity. Also due to the isolation of this spot, it represented a true 'oasis' amidst the towering summits.

Ibex were common here as well, as noted by the Workmans in 1912; sometimes flocks of thirty to forty animals were grazing not far from camp. The Workmans had also reported finding several stone circles, roughly 4 yds in diameter in this area; Kalau and the professor only found two rough traces of stone semicircles some 2–3 yds in diameter. Were these the same features or different ones?

In the second week of August, after spending nearly two months surveying and botanizing around the environs of basecamp, Dr. Dainelli started to prepare for his exit from the Siachen. Returning to the terminus was now out of the question, as the melt from the snow and ice would make the Nubra River unfordable. He could have opted to use the Bilafond La, but that had already been used by the Longstaff (1909) and Workman (1911, 1912) expeditions. He stuck to his original objective despite the onset of stormy weather; he wanted to ascend the Teram Shehr Glacier and cross over to the Central Rimo Glacier, and then descend into the upper Shyok Valley.

For nine days, the expedition wormed its way up the ice of the Teram Shehr; it was foggy and windy, the pace was agonizingly slow, and the glacier was very crevassed, so extreme caution was in order (the two Europeans had been using skis on much of the ascent). On the tenth day, the team reached a pass dividing the two watersheds: the Siachen to the west and Rimo to the east. Fortunately, the weather was now ideal. The professor christened this pass as 'Italia Col' (20,100 ft, today it is referred to as 'Italia Pass' on most maps. In his summary article in *The Himalayan Journal*, the professor used the word 'col,' but on the accompanying map it is labeled as 'pass'). The expedition camped just east of the pass adjacent to a rock buttress. Nearby, he found two rock cairns; one looked like it had been constructed very recently, while the other was in ruins. This was additional evidence that some locals had used this route from Baltistan to the upper Shyok River and quite probably the Karakoram Pass.

The expedition descended the Central Rimo Glacier but then took a detour to the North Rimo Glacier, where the professor had been sixteen years previously. The terminus of the glacier, which gives birth to the Yarkand River, was now much steeper than it had been. The expedition then made its way over to the Karakoram Pass, where a contingency of the ponies and their drivers were waiting. The expanded party spent the next two weeks making its way back to the Nubra Valley, where all of the expedition's unused supplies were removed from the area.

Dainelli and Kalau were able to clarify the topography of the upper Rimo and Teram Shehr basins; the existing map was in error in a number of points, which of course were now corrected. For example, Italia Col was some 3 1/2 miles farther east than shown on the Survey of India map. Numerous fossils and geologic specimens were collected along the route, as were meteorological data collected during their stay at basecamp. In addition, 450 specimens of flora were collected. When it came to anthropological measurements, some 150 individuals submitted measuring devices to the professors. In addition, it showed that a small expedition could cover a considerable amount of ground and complete a scientific agenda as well.

(For a review article of the peaks on the eastern side of the Siachen Glacier area, including a list of Balti mountain terminology, see the article by H. Kapadia in *The Alpine Journal*, Vol.91, 1986.)

Chapter 19

The 1930s: Mountaineering Begins in Earnest

Expeditions heading into the Karakoram-Himalaya purely to scale a summit or two was nothing new prior to 1930—Graham on Kabru in 1883, Mummery on Nanga Parbat in 1895, the Longstaff expedition of 1907 in the Garhwal Himalaya, the British on Everest, and the Germans on Kangchenjunga before switching over to Nanga Parbat are all examples. However, the frequency of mountaineering expeditions greatly increased beginning in the early 1930s. This is not to say that a number of expeditions whose primary objective was surveying did not take place as well, but there was a definite shift towards sport and away from science. It should be noted that even as late as the 1960s, a number of large expeditions included some scientists on their rosters—in many cases purely to gain additional funding rather than due to an unprecedented interest in science. As might be expected, these mixed expeditions—as contrasted with the pre-World War I and immediate postwar expeditions which were survey- and science-oriented, often generated internal conflict between the climbers and scientists over resource allocation and objectives.

The other aspect of Karakoram-Himalaya mountaineering which emerged during this era was the strong nationalism when it came to specific peaks (Table Two). The British had laid claim to Mt. Everest, which was not only named after one of their namesakes, but was really only accessible through Tibet since the Government of Nepal continued to refuse access to all seekers. Recall that the British had had on-again, off-again access to southern Tibet since the days of the Younghusband expedition of 1904 and the resulting treaty. Hence the Brits had access to Tibet like no one else, which in turn provided them with essentially a monopoly on Everest.

In time, K2 became an obsession at first with the Americans (1938, 1939, 1953) and then with the Italians (1909, 1954). Why a particular mountain became an obsession in certain countries is unclear. It's possible that a few climbers in a given country just plunked their fingers down on a map and said, "Let's climb it." Nationalism played a minor role in some situations and a major role in others. One country in which nationalism was a major issue was Germany. They had initially focused their attention on Kangchenjunga, but then in the early Thirties, after several attempts (1929, 1931), they started to think that it was not climbable and looked elsewhere. Their collective gaze ended up on the opposite side of the Himalaya from Kangchenjunga, on the 'naked mountain,' Nanga Parbat, on the extreme western end of the range.

The emergence of mass media in the 1920s had some role in promoting mountaineering ventures; most of Earth's surface had been mapped and the era of great exploration was over, so the public's attention had to be focused in a new direction. Instead of exploring horizontally, it was time to go vertically. New heroes would be found and proclaimed and, in some cases, lost. It is no coincidence that The Himalaya Club, as noted previously, was founded in 1929 in Simla, north India. Its purpose was to encourage geographers to fill in the blank spaces on their maps, as stated by Geoffrey Corbett a founding member. In addition, back then, as it does up to the present, it promoted scientific studies of all types, helping motivate and assist mountaineers and travelers alike.

In this section, we will review the expeditions of well-known mountaineers such as Smythe, Tilman, and Shipton, as well as several less well-known ones who ventured into remote areas. These expeditions were generally smaller and more spartan than their predecessors; although surveying was not totally cast aside, there was a definite emphasis on mountaineering. One common theme is that although some of these areas had already been visited or explored decades earlier, when it came to climbing a large mountain, not only did the party have to find a suitable climbing route, but even the approach to the mountain had to be reconnoitered. This was pioneering climbing and it took time and energy; the amount of time and energy spent on route finding—to the mountain and on it—frequently determined, along with the weather and snow conditions, whether a given expedition obtained the summit or not.

Another interesting thing about this decade and the increase in the number of expeditions was the fact that there was a global economic crisis—the Wall Street Crash of 1929. Nevertheless, these men and woman were able to come up with the funding to execute these adventures. There was also a subtle shift in personnel: prior to the 1930s, only the wealthy could make the trip out from Europe, the exception being the ex-pats who lived in South Asia. From this point forward, we start to see that mountaineers and explorers with modest wealth or truly little in the way of income, are able to participate as well.

Table 2: Significant Mountaineering Expeditions in the Karakoram-Himalaya

1929 and 1931—Attempt on Kangchenjunga. German exp.
1930—Attempt on Kangchenjunga. International exp. D.O. Dyhrenfurth.
1955—Kangchenjunga. British exp. G. Band. First ascent.

1931—Kamet. English exp. F. Smythe. First ascent.

1895—Nanga Parbat. British exp. Alfred Mummery. Three dead.
1932—Nanga Parbat. German exp. Willy Merkl.
1934—Nanga Parbat. German exp. Willy Merkl. Nine dead.
1937—Nanga Parbat. German exp. Karl Wien. Sixteen dead.
1938—Nanga Parbat. German exp. Paul Bauer.
1939—Nanga Parbat. German exp. Reconn. Four interned by British at the start of World War II.
1953—Nanga Parbat. German-Austrian exp. Herman Buhl. First ascent via the Rakhoit Glacier.

1933—Gangotri Glacier environs. Leader—M. Pallis. First ascent of Central Satopanth (22,060 ft). They also explored the area around Leo Pargial.
1934—Baltoro Glacier. Swiss-international. Leader—G.O. Dyhrenfurth. First ascents of Sia Kangri and Baltoro Kangri (H.J., Vol.7, under expeditions). They also filmed a short movie.
1934—Nanda Devi Sanctuary and Badrinath Range. British. Leaders—E. Shipton and H. Tilman.
1935—Kabru. Kangchenjunga Massif. Leader—C. Cooke. First ascent.
1936—Nanda Devi. Anglo-American exp. Leader—W. Loomis. First ascent.
1936—Gasherbrum I (hidden peak). French exp. Leader—M. de Segogne. Reached ~23,000 ft. This exp. was noteworthy because they employed 670 porters from Askole up the Baltoro Glacier to their basecamp. This appears to be a record for the number of porters employed by an expedition. They did, however, manage to make it to ~23,000 ft on the SE Ridge.
1937—Karakoram and Shaksgam exp. Leader—E. Shipton. Surveying.
1937—Zemu Glacier environs. Sikkim. J. Hunt., C. Cooke. Numerous ascents.
1938—K2: American reconnaissance exp. More than a recon., they made it to ~26,000 ft on Abruzzi Ridge. Leader—C. Houston.
1939—Karakoram survey exp. Leader—E. Shipton.

1921—Mt. Everest. British Recon. Howard-Bury. Via Tibet.
1922—Mt. Everest. British attempt. C.G. Bruce. Via Tibet.
1924—Mt. Everest. British attempt. C.G. Bruce and Norton. Via Tibet.
1933—Mt. Everest. British attempt. H. Ruttledge. Via Tibet.
1935—Mt. Everest. British Recon. E. Shipton. Via Tibet.
1936—Mt. Everest. British attempt. H. Ruttledge. Via Tibet.
1938—Mt. Everest. British attempt. W. Tilman. Via Tibet.
1951—Mt. Everest. British Recon. E. Shipton. Via Nepal.
1952—Mt. Everest. Swiss attempts. Via Nepal.
1953—Mt. Everest. British. Frist ascent. J. Hunt. Via Nepal.

1902—K2. British-Swiss-Austrian recon. O. Eckenstein.
1909—K2. Italian recon. Duke of Abruzzi.
1938—K2. American attempt. C. Houston.
1939—K2. American attempt. F. Wiessner.
1953—K2. American attempt. C. Houston.
1954—K2. Italian exp. A. Desio. First ascent.

Peak 36

In May of 1936, a small expedition which included John Hunt, who seventeen years later would lead the successful British climb of Mt. Everest, ventured into the ice-bound world of the Saltoro Range in hope of climbing Peak 36. Back in Europe, the airship *Hindenburg* had taken its maiden voyage that March. By mid-summer, the conflagration which became known as the Spanish Civil War was starting to smolder.

Peak 36 had been selected, like so many others would be in the future, by one of the team members perusing over a map—in this particular case section 52A of the Survey of India's quarter-inch maps. We have already seen that this eastern part of the Karakoram had been the site of Longstaff's 1909 and the Workmans' 1911 and 1912 explorations. The peaks surrounding the western edge of the great Siachen Glacier, including the Saltoro Range, was virgin ground. Peak 36, as it was called then (on the oldest maps it was referred to as 'Snowy Peak K10'), is today referred to as 'Saltoro Kangri.' It is a twin-summited peak composed of granite and ice; the primary summit (Saltoro Kangri I) stands at 25,396 ft and a half-mile to the north is the slightly lower 25,279-ft summit of Saltoro Kangri II. The mountain is surrounded by ice, the Sherpi Gang Glacier on the west, Peak 36 Glacier on the east, and the ice of the Saltoro Basin on the southeast.

At this period in time, Hunt was serving as a lieutenant in the Indian Army (King's Royal Rifle Corps), stationed in Bengal. His three European companions were fellow brothers in arms; James Waller was in the Army while Rowland Brotherhead and Dr. James Carslaw were in the air force. The expedition hired two Sherpas from the Darjeeling area to assist in the high-altitude work. The team had access to the writings, maps, and photographs from the Workman and Longstaff expeditions from which to make basic plans; however, it was not clear on the best route to take in order to gain access to the base of their objective. In addition, they had no idea which side of the mountain would provide a climbable route, if any.

During the first two weeks of May, the four Brits trekked to the village of Dansam, which is located at the confluence of the Kondus and Saltoro valleys, to the west of Peak 36. From there, they split up into two reconnaissance teams; Brotherhead, Carslaw, Waller, and one of the Sherpas (Da Tondrup) headed for the Sherpi Gang Glacier. From there, Brotherhead and Carslaw ascended the Dong Dong Glacier while Waller and Da Tondrup tried their luck on the Likah Glacier (today called the 'Mahori Glacier') located just to the south of the Dong Dong Glacier.

In the meantime, Hunt and the other Sherpa (Palten) ascended the Ghyari Glacier to the Bilafond La. When the teams arrived back at Dansam some days later, a council of war sorted out the results of the reconnaissance's. Hunt had reached the Bilafond La but only to find that an imposing ridge stood between the pass and their mountain. He judged that this was not a viable route. The other team had laid eyes on Peak 36's Southeast Ridge, which looked promising, but the main issue was gaining access to the lower ridge. The trek up the Dong Dong Glacier was viable but it unfortunately did not give access to the Southeast Ridge. The Likah Glacier, on the other hand, did lead to the ridge and hence it was selected as the avenue of approach.

The expedition moved up the Kondus Valley and hired a contingent of porters from the northernmost village. Troubles began almost immediately; the local porters went on strike for higher wages once they had reached the terminus of the glacier (Camp 1). A day was wasted on negotiations, but some fifty loads were transported the next day up to Camp 2. Their route took them through an icefall and then to the north side of the glacier; Camp 2 was located on the left moraine. From there, they decided to abandon the ice and cross over a col to the north, which would then give them access to the upper Likah Glacier (the narrative, which is a summary of the expedition, does not give us the reason why they took this route. However, another article by Hunt some two years later stated that they deviated from the ice because of a 2,000-ft-plus icefall on the upper Likah Glacier which barred the way).

It was a stiff climb up the col for the lead climbers the next day, as the weather turned snowy and windy. The first contingent of porters was a day behind the lead climbers; however, only half of the porters were able to trek part of the way up the col on their first attempt—the other half did not even make the attempt. According to Hunt, it was due to their being unfit rather than another ploy to increase the payrate. The next day, all of the porters except eight of the strongest were sacked and sent back home. In a developing blizzard, the two Sherpas and the eight porters carried loads to the col. The blizzard raged for three days; cooking—even within the confines of their tents—was out of the question. With feet of fresh snow accumulating, the future of the expedition was at this juncture in serious doubt. With reduced manpower and a lot of fresh snow, the Brits knew it was going to be difficult to haul the needed supplies to the base of the mountain; they pushed on.

The day after the blizzard had abated, Hunt skied to the upper Likah Basin in order to reconnoiter the south side of their objective. He was able to ascend a low col on the ridge which enclosed the upper Likah Glacier; he descended the east side and after a short distance (~1 mile) came

to another col, this one located on the lower part of the Southeast Ridge of Peak 36. From this vantage point, Hunt had a good view of the east side of the mountain and the upper section of a glaciated area known as the 'Saltoro Basin,' and a relatively flat ice plateau which forms the southern tributary of Peak 36 Glacier. To Hunt, the proposed route looked climbable.

Over the course of the following week, the loads were transported to the upper Likah Basin just below the col which became their basecamp. This was followed by a move to the Saltoro Basin via the second col, which they named 'Peak 36 Col' (est. 19,000 ft). While the loads were being ferried up-glacier, Brotherhead made his way down the Likah route in order to establish a new and hopefully easier line of communication up the Ghyari Glacier. This bold move was based on the information which Hunt had brought back from his most recent reconnaissance. To him, it looked like Peak 36 Col could be reached via the Bilafond La or the immediate area; this was a reversal of the conclusion he had reached several weeks earlier when he was on the Bilafond La with Sherpa Palten. Recall that at that time he did not think there was a viable route to the base of Peak 36.

The revised plan called for Brotherhead and a contingent of porters to trek up the Ghyari Glacier and make their way either to Peak 36 Col or the ridge near the col, via the Bilafond La. On the appointed day which Brotherhead was supposed to make the crossing over the Bilafond Wall to the Saltoro Basin (The Bilafond Wall is the ridge on the north side of the Ghyari and Lolofond glaciers), Hunt and Palten trekked down the Saltoro Basin parallel to the Bilafond Wall in the hope of facilitating the descent of Brotherhead and his porters. As it turned out, Hunt spotted twelve figures on the ridge high above, so he and Palten climbed up to meet Brotherhead and porters. Unfortunately for the expedition, there was no chance that they could ask the porters to make the descent; it was a serious downclimb. In an attempt to get the loads to their Advanced Basecamp on the Saltoro Basin, three loads were rolled down the steep slope; all three were swallowed by a bergschrund never to be retrieved. The only viable option was for Brotherhead and party to march back down the Ghyari Glacier and back up the Likah Glacier. This was of course a serious waste of time and manpower.

While Brotherhead and porters were making the long march back to the Likah Glacier, the rest of the expedition used the time and favorable weather to ferry what supplies they had to Peak 36 Col and then down to their Advanced Basecamp in the Saltoro Basin. However, a four-day-long blizzard ensued; this put a halt to all forward progress for the main body of the expedition. By June 13, Brotherhead and his contingent of porters had returned to basecamp on the upper Likah Glacier. A decision was made by the members of the expedition to commence with the climb as soon as possible.

Pursuant to that decision, they moved en masse to the base of the Southeast Ridge, where they established Camp 4. The period of good weather came to a crashing halt as soon as they had established Camp 4, and the snow started to fall in earnest. The next two days were wasted, as the team was confined to camp by the weather. Expedition members were becoming very impatient at this stage; food and fuel were running low despite the recent resupply, and the fresh snow was piling up.

After the most recent storm had abated, Camp 5 was established on the ridge after a short climb up a steep section blanketed by loose snow. They estimated the height of Camp 5 at 20,000 ft. The climbing had finally begun and the sun shined through a brilliant blue atmosphere; it was a good omen. From Camp 5, the route involved a steep ascent to where they established Camp 6 (23,800 ft, if their measured elevations had been anywhere close to reality; this would have been a serious increase in altitude, 3,800 ft, between camps. As it turned out, their measured altitudes were not well wide of reality).

There were two very large crevasses just below Camp 6 which gave the lead climbers some trouble; in addition, they had to fix ropes across a precarious section, as the porters were expected to make multiple carries up to this camp as well. The upper slopes of the ridge—at least what they could see from Camp 6—were less steep than the ground they had already covered; therefore, the climbers were hopeful that they could reach the summit, approximately 1,600–2,000 ft above, in one day. Dr. Carslaw was unwell, so he dropped back down the ridge and was no longer a part of the summit attempt.

Early on the morning of June 20, with ideal weather for a summit push, the three Europeans set out for the top (it appears that the two Sherpas descended to Camp 5; whether they were given the option of continuing towards the summit is not given in the text). This part of the ridge was definitely not as steep as its lower sections; however, as Hunt noted, the altitude was starting to affect their rate of ascent. He estimated that their pace dropped down to about 300 vertical feet per hour near the top of the ridge. As the ridge started to round off, they were hopeful that they were approaching the summit; however, it became evident some minutes later that they were still a considerable distance from the top. A little after 1 p.m., with a marked increase in the speed of the wind and a cloud cover starting to form, it was obvious to the summit team that the period of good weather was coming to a close. Coincident with the ominous weather was the diminishing energy reserves of the climbers; they knew that they had given it a solid attempt but were going to fall short. The threesome decided to

descend. At their high point, Hunt estimated that they were about half a mile and on the order of 600 ft below the summit.

As they descended and the weather rapidly deteriorated, they decided to make their way down to Camp 5 that afternoon. As they neared Camp 5, in the twilight Hunt managed to slip into a crevasse up to his elbows; he was extracted in due course with help from the men who had remained at Camp 5. He was not injured in his short fall. The next morning, the climbers abandoned most of their gear and descended to Camp 4 amid a major blizzard. Once they reached Camp 4, they made the group decision to attempt to trek to basecamp that afternoon at all costs. There would be no second attempt to reach the summit. Once they had downclimbed the Southeast Ridge, they were able to retrace their route over Peak 36 Col without getting swept into eternity by an avalanche, which were common on the east side of the col. The blizzard continued for another three days; nevertheless, a contingent of porters arrived at basecamp from the nearest village in order to assist in the dismantling of the camp. The team was back on dry land by June 24.

In hindsight, Hunt confessed that the team's estimation of elevations was in serious error. All of their camps on the mountain were some 1,000–1,500 ft lower than what they thought at the time of occupation. They were using an aneroid barometer but it was giving false readings. Hence Camp 6—which they thought was at 23,800 ft and therefore about 1,600 ft below the summit—turned out to be on the order of 22,200 ft. This meant a gain of 3,200 ft on summit day, a tall order to fulfill for a team that was already exhausted, even though this part of the route was not that difficult. It should be emphasized that this expedition, by virtue of the remoteness of the objective, was forced to spend a lot of its time and energy reconnoitering the lanes of approach, besides the route on the mountain itself. The time spent on the actual climb was short compared to the length of the expedition. This illustrates that despite the existence of a topographical map and the fact that a small number of explorers had been through the region previously, there was still a lot of adventure to be had by these 'later' parties.

Two years after this attempt, Hunt and Waller wrote an article which appeared in Vol.9 of *The Himalayan Journal*, in which they elaborated on the route finally chosen and the difficulties future mountaineers might expect. The poor weather was certainly a hinderance, as was the second reconnaissance to the Bilafond La, which was a major waste of energy and time.

The first ascent of Saltoro Kangri I was made in 1962 by a joint-Japanese-Pakistani expedition which also made use of the route up the Southeast Ridge. They took the long road for the approach; this

included a trek on the Ghyari Glacier-Bilafond La-Lolofond Glacier-Siachen Glacier-Peak 36 Glacier to the east side of the mountain. They established four camps on the mountain en route to the summit. There were two attempts on Saltoro Kangri II, the first in 1976 and the second in 1982, but unsurprisingly, there has been no activity since the beginning of the 1984 Siachen Glacier conflict. It appears to be a virgin summit.

Chapter 20

Sikkim Summits

By the mid-1930s, the Germans had amassed a considerable expertise in high-altitude mountaineering gained from multiple attempts on Kangchenjunga and Nanga Parbat; despite some incredible efforts, neither peak had been summited. The German Himalayan Association (GHA) had scheduled another attempt on Nanga Parbat for the summer of 1937 but did not want to be inactive during the 1936 climbing season; so, it sponsored a small expedition to Sikkim. The objectives were to trek into the Zemu Valley and climb whatever peaks caught their attention. After acclimatization, they were to focus their effort on Siniolchu. In addition, they were to continue with the survey of the Zemu Valley, which had been started during the 1931 Kangchenjunga expedition but never completed.

The GHA kept the expedition small, following the logic of Shipton and Tilman that a small party can often accomplish as much or more than a large one due to the simplicity of movement and logistics. The four principals were Paul Bauer, Adolf Gottner, Dr.Gunther Hepp (medical doctor), and Dr. Karl Wien (Ph.D in physics). Bauer was Germany's top mountaineer of the day, having led both the attempts on Kangchenjunga in 1929 and again in 1931. During World War II, he trained German troops in the art of mountain warfare; in 1943, he was in the Caucasus attempting to push to the oilfields on the Caspian Sea. Bauer was a member of the Nazi Party and director of the socialist-run mountaineering federation; he was not shy about his anti-Semitic views. Dr. Wien had been on the 1931 Kangchenjunga expedition as a surveyor but also had an extensive climbing résumé, which included most of the well-known peaks in the Alps; he had also climbed high in the Pamirs in 1928. There was an unofficial fifth member of the expedition who attached itself to the expedition in Gangtok—a dog named Wastal. He faithfully followed up the expedition to the Zemu Glacier and climbed as high as the upper Siniolchu Glacier, most likely a personal best.

The expedition departed Gangtok on August 10, which was in the middle of the summer monsoon, and trekked on the well-established path that led north up the Teesta River Valley. At the junction of the Zemu Valley, the party veered to the northwest amidst thick stands of rhododendrons. They made their way to the Zemu Glacier, where several miles above the terminus they established their basecamp (~15,100 ft). This was the same site that they had used as basecamp on their 1929 and 1931 attempts on Kangchenjunga. Bauer dismissed all of the porters except six, which were retained for the surveying and climbing aspect of their program.

One of the first orders of business was a closer look at Siniolchu (22,594 ft); this peak is often considered one of the most aesthetic in the Himalaya. The climbers had of course seen it during the two previous expeditions, and it had made an indelible impression on them. Here is how Dr. Wein described it: “We know of no mountain that can equal Siniolchu in beauty and boldness of feature. Its ridges are as sharp as a knife-edge, its flanks, though incredibly steep, are mostly covered with ice and snow, furrowed with ice flutings so typical of the Himalaya.” Part of the mystic is that Siniolchu is only visible from the upper Zemu Valley, which means that not that many climbers or trekkers have been fortunate enough to lay eyes on its near perfect form.

Pursuant to their objective, the climbers worked their way up the Siniolchu Glacier and set up a camp directly below the North Face of the peak. However, over the next several days there was significant intermittent snowfall, and the snow that was already on the ground was extremely soft and deep. In addition, avalanches were thundering around them with considerable frequency. After considering the snow conditions, the party decided to leave a dump of food and gear to be retrieved when conditions improved, after which they made their way back to basecamp.

While the monsoon raged, climbing was out of the question, so the party decided to use the time in a reconnaissance of the lower valleys located to the south and east of Siniolchu. They proceeded to ascend an unnamed pass located at the head of what they called the ‘Zumtu Glacier’ (today it is called the ‘Zumthul Phuk Glacier’). During a very brief break in the clouds, they were able to view a host of mountains to the south, including the Siniolchu Needles. These rock formations are located on a 7-mile-long ridge that extends from Siniolchu towards the south and then southeast. The expedition worked its way down the Zumthul Phuk Glacier and camped directly opposite the highest of the Siniolchu Needles. The next day, they managed to climb to the base of the ridge on which the tallest needle is located, but were then overwhelmed by torrential rain. After their attempt on the needle, they proceeded to retrace their route back to basecamp. En route, they climbed a small peak (Liklo, ~19,000 ft) located just over a mile to the east of Siniolchu, on the headwall of the Zumthul Phuk Glacier. They also tried surveying, but the cloud cover limited the range of their work.

In an effort to escape the near continuous rain (or snow depending on elevation), the expedition decided to head north for several weeks, after which they would return to basecamp and resume the survey and make their attempt on Siniolchu. In this vein, they worked their way over Nepal Gap Glacier and set up a camp in the upper basin, just to the north of the spur ridge that extends east from Kangchenjunga. They spent the next several days climbing on the spur ridge just to the south of Nepal

Gap. They referred to the summits on the ridge as 'The Twins' (Gimmigela) and 'Sugarloaf.' With copious amounts of fresh snow on the ground, and more falling each hour, it was slow-going and they had to use extreme caution when it came to selecting which slopes to climb.

On September 9, Dr. Wein and Gottner set out to climb Tent Peak (24,153 ft, known today as 'Kirat Chuli'); fortunately, the weather improved briefly, affording the team some views when they reached higher elevations. En route to Tent Peak, they traversed high on Nepal Peak (23,546 ft), reaching the central Summit (23,500 ft). It is unclear why they did not push a little farther to the highest summit of Nepal Peak, but possibly because Tent Peak was the main objective and they did not want to use up any additional time. (The first ascent of the northeast summit of Nepal Peak was by the Grob expedition of 1939. The slightly lower southwest summit, 23,422 ft, had already been reached in 1930 by Erwin Schneider, who was part of the international Kangchenjunga expedition).

From the upper slopes of Nepal Peak, the route traversed a long, knife-blade ridge which ultimately gave access to the summit of Tent Peak. Even on this narrow ridge, the snow was deep and soft, and unsurprisingly, they triggered an exceptionally large avalanche. The slide was below them, but it was a wake-up call nevertheless. A few minutes later, they started a second slide; with the weather deteriorating, they decided to call off the attempt on Tent Peak, and were able to reach their camp in the upper Nepal Gap Glacier that same evening. (The first ascent of Tent Peak was also by the Grob expedition three years after this attempt.)

After waiting out another multiday snowstorm at basecamp, the team decided it was time to make their much-anticipated attempt on Siniolchu. The four Germans and two Sherpas (Nima, Mingma), weighted down with their climbing and camping gear, trudged up the Siniolchu Glacier through the fresh accumulation of snow. After they had climbed through the lower icefall into the upper basin, they began to search for the supplies they had left some four weeks earlier. They dug and dug, but never recovered any of the supplies—the snow was just too deep. Despite the setback, they proceeded through the upper icefall, cutting steps in the ice and hauling the loads up via rope when necessary. They established their second camp above the second icefall at 18,700 ft, directly below the northeast face of Little Siniolchu (21,450 ft).

The following morning, leaving the two Sherpas in camp, the four climbers started to ascend the steep northern slopes of the mountain. The wind-drifted snow was deep and unconsolidated; nevertheless, they were able to reach the Northwest Ridge (~20,400 ft) by early afternoon. Forward

progress was along a narrow, highly corniced ridge which demanded a considerable amount of caution. They only advanced a short distance along the ridge that afternoon, so decided to bivouac on a relatively flat section. Despite the lack of tents and sleeping bags, Dr. Wien's account indicates that they managed without too much hardship.

They were moving again by 6 a.m. the next morning. The ridge ahead was undulating but always steep and corniced. Several hours into the traverse, they decided to split into two teams; Bauer and Dr. Hepp remained behind in support, while Gottner and Dr. Wien continued towards the summit pyramid. The crux of the ridge was a 200-ft ice wall which took some time to overcome. The condition of the snow on the ridge was highly variable, being a function of the exposure; it ranged from unconsolidated to concrete. Around 2 p.m., they were on the west side of the mountain just below the summit which was protected by a large cornice. They ended up tunneling through the cornice and onto the summit (first ascent). Fortunately, the weather had remained climber-friendly; low clouds hung in the valleys below, but high on the mountain, the sun was shining and there was only a slight breeze. From the top, they had a good view of the South Ridge and its countless ice flutings; they reported that the North and Southwest faces "fell with appalling steepness."

The two climbers spent four hours on the descent back to the site of the bivouac, where they rejoined Baur and Dr. Hepp (the ascent had taken eight hours). The latter two climbers did not make their own summit bid, although we are not told why in the narrative. The reunited foursome spent a second night at the bivouac, where their luck with the weather continued; it was cold but otherwise good conditions. They continued to downclimb the route the next day and were reunited with the two Sherpas that afternoon. The six men were back at their basecamp along the Zemu Glacier the following afternoon. It had taken seven days for the climb of Siniolchu.

During the first four days of October, the weather was ideal for climbing; during this period, Dr. Hepp, Gotten, and Bauer made their attempt on Simvu (22,348 ft), another fine peak located at the head of the Zemu Glacier adjacent to the Zemu Gap. Dr. Freshfield had been there in 1899 but never attempted the peak. Earlier that same summer—May, in fact—Marco Pallis and three companions had attempted Simvu; they got within 1,000 ft of the summit before turning around.

Despite the fresh snow lying on the Simvu Glacier, the party made good time, establishing its one and only camp at the base of the northwest side of the mountain. The next morning, they climbed the West Ridge, which was blanketed with fresh snow; however, by early afternoon they reached the

summit (first ascent). The threesome was back at on the afternoon of the third day, obviously making short work of the climb—a testament to their level of fitness. It was a good thing that the climb did not take longer, as the weather once again turned snowy.

By now, it was the second week of October, and with winter not far off, Gottner and Bauer formed their own party and ventured north of the Zemu Valley. They spent several days on Hidden Glacier and managed to climb three peaks in the 19,000–20,000 ft range. From Hidden Glacier, they then trekked to the northeast, crossing the snow-free Theu La (17,100 ft), which took them into the Langbo Valley. The fact that Theu La was snow-free shows the remarkable decrease in precipitation from south to north in Sikkim. At that same elevation on the Zemu Glacier there was, for example, feet of new snow. They followed the Langbo River to the south and eventually picked up the main path that led back to the Teesta Valley.

Recall that Dr. Wien had not joined his three companions on the Simvu climb; he had wanted to spend the remaining days surveying the area to the south of the Simvu and Siniolchu peaks. He took four porters and headed over Simvu Saddle (est. 19,400 ft). On the descent, one of the porters slipped and, in the process, lost his load; the porter did not sustain any injuries, but the same cannot be said of the load. It took a 200-ft freefall, destroying the theodolite on impact; surveying was hence cut short prematurely. The only course of action for Dr. Wien was to head back to civilization. By this time, his party was committed to the southeast side of the range, so it made sense to continue in this direction, although the route was unknown and there was no trail through the forest. After traversing the South Simvu Glacier, they descended into the upper Passanram Valley (today called the ‘Rukel Valley’). Shortly thereafter, they were forced to exit via a gorge in the Raguung Valley that was difficult to say the least—due to its steepness and dense forest. Days later, when they finally reached the Teesta River, the party had been out of food for some time. Overall, his exit from the Zemu Glacier had been much more of an epic than Dr. Wien had anticipated.

This small German expedition covered a considerable amount of ground and made two first ascents of 20,000 ft-plus peaks, but the surveying showed limited results. The weather, specifically snow and rain, limited their movements and of course put a significant dampener on the survey. However, this is not uncommon for that time of year, which begs the question of why they commenced operations in early August? The summer monsoon was well understood in that era; it typically starts in late May or early June in Sikkim, and terminates on average in mid-September. Dr. Wien and Bauer had been in the area twice before, so they should not have been surprised with the frequency and intensity of the

storms in August and September. It does seem, however, that the monsoon precipitation lasted through September and only began to slowly diminish in early October, which was unfortunate for their surveying and climbing agenda.

It should be noted that throughout the decade of the 1930's, German climbers were active in the Himalaya- attempting some very difficult routes. As noted, they made to attempts to climb Kangchenjunga via the extremely technical Northeast Ridge, the first in 1929 and the second in 1931. Henceforth, seeing the difficulties with Kangchenjunga they redirected their efforts to the western Himalaya, Nanga Parbat in particular. In the thirties the Germans sent five expeditions to Nanga Parbat. The first in 1932 and again in 1934 where the loss of life, climbers and porters, was very high. Climbers got high on the mountain but never could quit reach the summit. After two more attempts in 1937 (16 deaths) and 1938 on the Raikhot route located on the north side of the mountain, in 1939 a smaller expedition was sent out in order to reconnoiter alternative routes. After the expedition had been concluded and the party was in Karachi waiting for a ship back to Europe, the Germans were interned by the British due to the outbreak of World War II. After a number of years in a prison camp in northern India, Peter Aufschnaiter and Heinrich Harrer (both Austrian) escaped and made their way into Tibet. Both men befriended the young 14th Dalai Lama and ended up living in Tibet for seven years. They fled Tibet in 1950 as the communist Chinese moved in. Harrers' book, *Seven Years in Tibet* (1953) is definitely worth a read.

On a somber note, in June of 1937 Dr Wien, who was the leader of German Expedition to Nanga Parbat, was killed along with six other Germans and eight porters in an ice avalanche, he was 30 years of age.

Chapter 21

Masherbrum

Even if you do not know where it is or anything about this peak, you would have to admit it has a great-sounding name. Situated just to the south of the Baltoro Glacier, about 20 miles southwest of K2 is this gem of a mountain. With the East Summit at 25,659 ft, making it the twenty-second-highest peak, it towers above the northern end of the Hushe Valley by some 14,000 ft. Interestingly, it was the first of the big peaks to be surveyed in the mid-19th century, and hence its original designation by the Survey of India was 'K1.' In addition to the primary summit, there is a slightly lower West Summit (25,610 ft) not far away along a connecting ridge. The meaning of the name 'Masherbrum' is a bit controversial; according to Carter in his article on "Balti Place Names in the Karakoram" (*1975, American Alpine Club*), the most likely meaning is something on the order of 'muzzle-loading gun mountain.' The story is that when some people view the mountain from the Hushe Valley (south), there is some resemblance to an old muzzle-loading rifle.

In Chapter 14, it was noted that the Workmans had ventured on its flanks in 1911 but no one had attempted to reach the summit until the 1938 expedition led by James Waller, which we will now summarize. This name should sound familiar—he was a member of the Peak 36 expedition (Saltoro Kangri I) of 1936 which of course was able to climb high on that peak but were denied the summit. Waller, who was still in the Indian Army at this time, was joined by four climbers, three of which were also in the Army: Jock Harrison, Roger. Hodgkin, Dr. T. Graham Brown, and James Roberts. Another addition to the party Mr. & Mrs. Teasdale, both medical doctors who resided at basecamp while the climbers were making their summit bid. The expedition also imported five Sherpas and two Gurkha soldiers.

The climbers departed Srinagar in late April and were trekking into the village of Hushe by mid-May. The first order of business was to determine which side of the mountain they should reconnoiter for a climbing route. Based on three images taken by the Workmans in 1911, Waller and team thought they saw a possible climbing route on the southeast. Therefore, they decided to reconnoiter the southern approach to the mountain. The north-south-oriented Hushe Valley bifurcates 3 miles above the village of Hushe; the village is about 10 miles south-southeast of the summit. The western valley leads to the Masherbrum Glacier, while the eastern branch continues northward to the Ghondogoro Glacier.

To the climbers it appeared, from lower elevations, that both valleys might provide the needed approach route, hence they had to reconnoiter both possibilities. The first effort was made in the west fork of the valley. The reconnaissance team made quick work of the lower Masherbrum Glacier; they trekked up the right-hand moraine (east) and established a camp around 13,300 ft some 4 miles above the terminus of the ice. The next day, from a vantage point on the ridge above the glacier, the climbers were able to garner a detailed look at the mountain. The summit is surrounded by a plethora of satellite peaks with a complicated array of ridges and spurs that radiated in what must have seemed in all directions to the team. The most pressing issue was that the upper Masherbrum Glacier did not provide a seamless transition to the summit pyramid—there was a massive ice-cliff which towered above it.

The most prominent feature on their proposed route was a ridge of snow and ice which was oriented from the northeast to southwest, reaching an elevation of approximately 21,000 ft; they labeled this feature 'The Dome.' Lying to the southeast of The Dome was a heavily crevassed steep glacier which they ended up calling 'Serac Glacier.' There was a small snow basin (Serac Basin) at the foot of The Dome between it and Serac Glacier, which they thought looked like it would allow access onto The Dome. Once they had climbed the Dome, it appeared that they would have relatively easy access to the summit pyramid. A climbing route was starting to emerge; they would establish basecamp on the Masherbrum Glacier, then proceed up the Serac Glacier which flowed into the Masherbrum Glacier. They would traverse Serac Basin, and climb up and over The Dome, which then put them onto the highest of the mountains' glaciers, just below the East Ridge, and hopefully a line to the summit.

Prior to committing to a line on the southeast side of the mountain, the climbing party minus Waller—who was in the process of returning to basecamp in order to sort out the gear and supplies from the forthcoming assault—climbed the ridge which formed the western barrier of the Masherbrum Glacier. The purpose was to see if any plausible route existed up the west side of the mountain. They succeeded in getting atop the ridge, which was around 16,000 ft, and part of the way down the western slopes, but they ran into the insurmountable wall, which dropped down to the Aling Glacier. Hence, they gave up on there being any suitable western approach. As it turned out, had they been able to get onto the Aling Glacier from there, as the Workmans had discovered, the route to the western side of the mountain was barred by another steep ridge that separated it from the Liligo Glacier.

At this point in time, it looked as if the Serac Glacier route was to be the line to the top, but unwilling to leave any ground untested, Brown, Roberts, and Waller ventured up the Ghondogoro

Glacier on the east (they call it the 'Khondokoro Glacier'). They quickly came to the realization that this was not going to provide suitable access to a climbing route.

Meanwhile, while the three climbers were reconnoitering the east side, Harrison and Hodgkin had been making their way up the Serac Glacier into the Serac Basin. The climb from basecamp entailed a mix of steep ice and snow with a short rock pitch thrown in. The route up to Camp 1, which was placed near 17,000 ft just short of Serac Basin, was subject to rockfall and avalanches, which peeled off the surrounding slopes once they were illuminated each morning by the rays of the sun.

Over the following days, intermittent snow fell, but the climbing program was still on schedule. There were areas in Serac Basin and on The Dome where the climbers did fix several ropes, but most of the route was straightforward. There were problems with the porters, however—all but ten deserted without any kind of warning. Despite the desertions, the team pushed onwards; Camp 2 was established on June 1 at the eastern base of The Dome, and the build-up of supplies began immediately. As snow continued to fall, it became evident that Camp 1 had to be moved because of avalanche danger. It was relocated higher up on the edge of Serac Basin.

Harrison and Waller were now out in front and finished off the upper section of The Dome. This was a more difficult proposition than the lower section. They placed Camp 3 on the ridge, but below the top of The Dome. This was going to be a temporary camp. Just above Camp 3 was a large ice bulge which blocked further progress up the spine of The Dome. The climbers took to the slopes just below the crest of the ridge in order to prospect a route. Despite knee-deep snow, which certainly appeared to be stable, they were able to make a 500-yd traverse and then overcome a 50-ft-high section of ice. Since they planned on bringing porters this high, they were forced to chop steps in the ice. After negotiating a crevasse and then a 25-ft-high wall of ice, they came to the cornice which hung over the eastern slope. Harrison was able to tunnel through the cornice and set foot on top of The Dome.

From their vantage point atop The Dome, they were able to view the ground which led to the upper mountain; in the foreground was an ice basin which they judged to be about three-quarters of a mile across, which gave them access to the base of Masherbrum's Southeast Face. A permanent Camp 3 was established on top of The Dome. The weather over the previous ten days had been primarily snowy, although the wind had mercifully been light. As it turned out, they were now entering a period with very persistent cloud cover and limited visibility.

Despite the clouds and snow, the team was making incremental progress. On June 11, Camp 4 was placed in the basin at 21,300 ft, directly below the Southeast Ridge and its strata of eye-catching red granite. Shortly thereafter, a blizzard developed, so all forward progress ground to a halt. With the climbers confined to their tents, they had plenty of time to strategize. The newest version of their plan was as follows: as soon as the weather allowed, Harrison and Hodgkin would strike out with four of the porters to the upper part of the basin, from where they would attempt to climb to the Southeast Ridge. If the ridge was a 'no go,' the two climbers would establish Camp 5 in Snow Basin and look for possible routes on the Southeast Face.

With the blizzard losing its energy but still a force to be contended with, Harrison and Hodgkin—anxious to get moving again—departed Camp 4 anyway; however, there was no possibility of climbing to the crest of the Southeast Ridge until the weather improved. As a concession, the two climbers were able to establish Camp 5 in the upper Snow Basin. Meanwhile, a large avalanche came down near Camp 4 and swept across 200 yds of the trail leading to Camp 3.

On June 15, the two lead climbers started to tackle the Southeast Ridge; although the weather had improved, it still was not ideal for a summit attempt. They managed to press the effort along the ridge to the base of the Southeast Face, where they decided to plant Camp 6 (~23,500 ft). The following day, the climbers awoke to a blue sky; they decided to proceed up the snow-covered Southeast Face, which was bounded by the Southeast and East ridges. They estimated that the angle of this part of the face was on the order of 45^{o}. By the end of the day's climb, they reached the lower lip of a crevasse which provided them with some relatively level ground; looking above to the upper face, the angle only grew steeper, so they decided to install Camp 7 *in situ* (~24,600 ft).

As the reader may have sensed by now, the upper mountain is topographically complex; the primary or East Summit (what they called the 'North Summit') is connected by a third-of-a-mile-long ridge to the West Summit (what they called the 'South Summit'). The Southeast Ridge veers off from the West Summit while the East Ridge leads directly to the East Summit; Camp 7 had been erected directly in the middle of the Southeast Face. The good news was that from Camp 7, they could proceed on any of the three potential routes: Southeast Face, East Ridge, or the Southeast Ridge. On the downside, in order to gain either ridge, the climbers would have to undertake a delicate traverse across the face. Recall that there had been a considerable amount of fresh snowfall over the subsequent weeks, as well as the fact that the face was steep, but not steep enough to shed all the recent snow. While the lead

climbers were pushing the route forward and upwards, the rest of the team were building a supply base at Camp 5. By mid-June, they had approximately fourteen days of food in house at Camp 5.

The first summit attempt was made on the 17th, when Harrison and Hodgkin traversed to the East Ridge in waist-deep snow and then started to climb the rotten red granite which constituted the lower part of the ridge. The sky was free of clouds but a strong wind was swirling loose snow all around. By early afternoon, they were exhausted and decided that the summit was not within their reach, so they turned back to Camp 7. They had suffered some minor frostbite that morning, so they spent the rest of the afternoon restoring the circulation to their extremities.

That night, all hell broke loose; another blizzard hit the mountain, and in the early morning hours an avalanche swept through Camp 7, including the tent in which Harrison and Hodgkin were residing. They were unhurt and managed to extricate themselves from the tent in short order. They resolved to move down to Camp 6 immediately, despite the ongoing blizzard. When they departed Camp 7, the visibility was reasonably good considering they were in the middle of a storm. However, two hours later, the visibility was down to near zero and the two climbers were lost. They found shelter in a crevasse; fortunately, they had carried their sleeping bags from Camp 7. They had to spend all of that day and the next night in the crevasse, but early the following morning, with a break in the storm, they were able to set eyes on Camp 6, only about 400 ft below.

Hodgkin and Harrison stumbled down to Camp 6 that morning; they were badly frostbitten on their hands and feet. Although the storm continued, the intensity diminished that afternoon to the point that Waller, who was at Camp 6, decided that a full-on evacuation was necessary despite the condition of two lead climbers. There were four porters at Camp 6, which proved to be a godsend, as now they were needed to help the two climbers off the mountain. The first task was for the porters to stamp a track down to Camp 5 through snow that varied from thigh- to waist-deep. The next day, the evacuation continued; mercifully, windspeeds had dropped, but snow was still falling and it was very cold as the party made its way to Camp 4.

Over the course of the next several days, the weather improved and the evacuation continued in an orderly fashion. Once off the steeper terrain, the two frostbitten victims were carried down the Masherbrum Glacier to the village on makeshift stretchers composed of skis and various bits of rope. The two Teasdales, which as you may recall were medical doctors, attended to the patients as best they

could, considering they had little to work with; the small supply of morphine had been lost high on the mountain. Bandages were improvised from sterilized bicycle tires and inner tubes, as well as clothing.

After a week of medical attention at Hushe, the expedition started the 250-mile-long trek back to Srinagar. Harrison had to be carried on a stretcher the entire time, while Hodgkin was able to ride a pony. In the end, Harrison lost all his toes to frostbite and many of his fingers, whilst Hodgkin lost some digits but not as many as his climbing partner.

This ended the 1938 attempt on Masherbrum. Another high mountain had repelled its trespassers. In concluding his account of the climb, Waller suggested that they were defeated by the weather and associated deep snow. Even if we allow for the fact that their estimates of elevation are in error—that is, they were too high—at their highest point the lead climbers were probably from 800–1,000 ft below the East Summit.

As it turned out, they had been in constant fear of frostbite while high on the mountain. Waller made a particularly good point when he wrote, "… I am convinced that no sort of normal leather boot is really satisfactory for these conditions, where feet and socks are usually wet." We often forget that 21st-century gear is lightweight and provides a lot more thermal protection than the gear that these early climbers and explorers were forced to live with. It is certainly a deciding factor at higher elevations and in extreme conditions.

Those readers familiar with the history of mountaineering may have recognized the name of one of the climbers, James 'Jimmy' Roberts. The attempt on Masherbrum was one of his early adventures in what would be a long line of them. He lived a considerable part of his adult life in India and then Nepal. He worked as logistics officer on many of the major expeditions to Nepal in the 1950s and 1960s, and then founded Mountain Travel, a travel agency specializing in assisting expeditions and the emerging trekking industry. Among other mountains, he also led the expedition that made the near first ascent of Machapuchare (22,943 ft), the so-called 'Fish's Tail,' outside of Pokhara. The summit team of that expedition, David Cox and Wilfred Noyce, turned around on steep ice about 150 ft below the North Summit, not in deference to the local religious beliefs but because of the difficult ice climbing and an approaching storm (see an article by C. Wylie in *The Himalayan Journal*, Vol.20, 1957). The Nepalese Mountaineering Association does not issue permits for this peak, supposedly due to the religious beliefs of the local peoples, who say that the mountain is the home of a goddess. There is some public debate, however; evidently, it is hard to find any local inhabitants who believe this to be true.

There were two more attempts on Masherbrum, both on the Southeast Face, before its summit was finally violated in 1960. The successful 1960 expedition was led by Dr. George Bell (a physicist) and consisted of a young group of American climbers. The team spent forty-four days on the mountain and experienced—like their predecessors—plenty of stormy weather and avalanches. They also made their ascent via the Southeast Face. The summit pair, Dr. Willi Unsoeld and Dr. Bell, made good use of supplemental oxygen.

To this point, we have reviewed a number of expeditions that have ventured deep into the Karakoram, and two common themes have emerged: the weather during the summer months is often stormy, and the obvious fact that few high mountains were being summited, although there had been plenty of attempts.

A seven-to-ten-day period of good climbing weather was rare. An expedition had to be lucky; when high on a mountain, they could only hope that it corresponded with a period of benign weather. Another factor to consider is that right after a major snowstorm, the skies may clear, but the conditions on the ground may be far from climbable due to unstable and/or deep snow. This lessens the length of the next period of suitable weather, reducing the odds of success.

The second theme noted above is that few if any summits above 24,000 ft were being climbed. Not only was it the weather, but we must also factor in the quality or lack of quality of the gear they were using. It was heavy, bulky, and non-waterproof for the most part; this may sound like a minor point, but it is not. Modern lightweight gear has made a massive difference in mountaineering over the decades. (See Chapter 33 for a more detailed discussion on this theme.)

Chapter 22

The Swiss Arrive in Garhwal

Prior to the mid-1930s, the Swiss and Austrians, despite their extensive mountain heritage, were not big players in the Karakoram-Himalaya, at least not at the national level. Individuals from these two Alpine nations participated on expeditions, mainly those organized in Germany, or they were hired on as guides, but there were no major expeditions originating from these lands. In 1939, the Swiss mounted a small expedition to the Garhwal Himalaya that was ambitious to say the least. The objectives were to climb Dunagiri prior to the start of the monsoon, then during the monsoon rains attempt to conduct some survey work on the Kosa Glacier just east of Hathi Parbat. In addition, they would attempt to climb whatever summits they could find in this region, weather permitting. In the late summer, hopefully after the monsoon rains had diminished, they wanted to attempt Chaukhamba (Badrinath Peak), farther west but still within the Garhwal district.

The party consisted of four Swiss: Ernst Huber who would conduct the survey, Fritz Steuri and David Zogg who were Alpine guides, and André Roch who was the leader. Roch had climbed extensively in the Alps in his youth and was an accomplished skier. Later, he became an expert in snow physics and avalanche analysis, and for many years he worked for the Swiss Federal Institute for Snow and Avalanche Research. When the ski industry was developing after World War II, he was a much sought-after consultant on all things regarding snow. The Swiss also employed six Darjeeling Sherpas.

The expedition trekked into the Garhwal district from the trailhead at Ranikhet via the Kuari Pass. They worked their way up the north side of the Rishi Gorge (see chapter 23 for the Shipton and Tilman description of the Rishi Gorge) and then up the Rhamani Glacier located on the southeast side of Dunagiri. Like Kamet to the north, Dunagiri (23,182 ft) by this time had been attempted several times. Although the area around the mountain had been explored by Graham and later by Longstaff, the first attempt was in 1933 by Oliver and Campbell. In 1936, Shipton and Angtharkay were able to get within 1,000 ft of the summit but then threw in the towel. Next in line was Smythe and Oliver, who got the closest to the summit; they turned back after working their way one-third of the distance across the long, narrow summit ridge.

The Swiss set up their basecamp (~16,400 ft) on the Rhamani Glacier and were installed in it by the third week of June. They knew that the monsoon rains in this region generally commence in late June; this did not leave very much time to make the climb before the precipitation started to fall. Their

narrative does not give any reason for the late start, but all they could do now was hope that the monsoon itself would make a late appearance.

Their first climbing objective was to reach a saddle on the Southwest Arête, which they ended up climbing in good order; it was there that they placed Camp 1 (~19,500 ft). The following morning, Roch walked a short distance up the arête from camp to gaze at the view; the sky was free of clouds and the surrounding peaks glistened in the early morning sunlight. Without warning he found himself plunging into a hidden crevasse. He had been stamping his feet while admiring the vista and had of course punched through a snow bridge. He landed on a shelf that extended from one of the crevasse's walls; he was unhurt but there was no way he could extract himself. He had lost his hat into the depths, but his camera was still around his neck. He would just have to wait until someone in camp noticed he was missing for breakfast.

After twenty minutes had passed, he heard footsteps above, and so he shouted. It was one of the Sherpas, and the Darjeeling resident returned to camp to organize a rescue party. Five minutes later, the end of a rope was dangling in front of Roch; like a good photographer, he sent his camera up first and then himself. Once back on the surface, an evaluation showed that his camera was still in good working order but he had sustained a minor cut on his left eyebrow.

With the crevasse incidence behind them, they resumed the climb that afternoon. They continued to work their way up the arête, fixing sections of rope where needed; they returned to their camp that afternoon. Early the next morning, they were back on the arête, steadily gaining elevation despite the fresh snowfall that had occurred overnight. The climbing was primarily on snow/ice, but there were occasional sections of rock: generally loose with fresh snow on top. Roch notes that late that morning they were able to gain "… the top of the buttress, the point of junction with the snowy ridge leading gently towards the summit." They were making good progress.

The summit ridge, which looked easy from lower down the mountain, was narrow, corniced on both sides, and was covered with unconsolidated snow. They proceeded cautiously; sometimes they crawled on their knees, while at other times they sat and straddled the knife ridge, inching forward. By 2 p.m., amid thick fog they gave up the chase for the summit—at least on this day—they turned around and headed for a lower camp. They were low on energy reserves by the time they stumbled into Camp 1, but the Sherpas took good care of them that evening. The climbers were all unwell; they not only had a touch of altitude sickness, but Steuri, who had not been feeling good for several days, had little

appetite, and when he did eat, he had trouble keeping it down. Roch was experiencing violent headaches, most likely due to his tumble into the crevasse the day before.

It was snowing the following day, so they remained at Camp 1; all indications pointed towards the commencement of the monsoon. The day after, June 26, they decided to return to their basecamp and recuperate; nevertheless, they maintained hope of a second attempt. They ended up spending a week at basecamp before resuming the climb back up the arête. On this second attempt, they spent one night at Camp 1 and then proceeded up the crest of the arête as they had done some ten days prior. This time, however, they were going to establish an intermediary camp (Camp 2, 21,653 ft) at the top of the buttress, from which they would initiate their summit push.

They were climbing by 6 a.m. the next morning, and the weather was excellent for a change. It took them two and a half hours to return to their previous high point; however, they had shaved off an hour and a half from their first attempt. Farther along the ridge, they had to navigate around several gendarmes. The final section towards the summit consisted of two steep steps; fortunately, the snow was firm and the weather remained ideal. They reached the summit around noon. They only spent a few minutes on top but absorbed as much of the view as possible. They could see well into Nepal to the east and the barren slopes of Tibet to the north.

Their descent was slow, as downclimbing the ridge required a considerable amount of caution. At one point, Steuri thrust his ice axe into a cornice in order to use both of his hands to belay Roch, but the cornice broke off from the ridge, taking his ice axe down the mountain. Once they had traversed the summit ridge, they took a two-hour rest at Camp 2 before proceeding down to Camp 1. The descent from Camp 1 to basecamp was uneventful as well. Once back at basecamp, they had a nine-day wait until the porters were scheduled to arrive; it was time well spent, as they were able to recover from their various illnesses before embarking on phase two of their expedition.

From Dunagiri Basecamp, they trekked back to Joshimath, where they spent six days feasting—at least what constitutes feasting in Joshimath (you have to have been to Joshimath to appreciate it). The expedition then proceeded with phase two, the exploration of the environs of Kosa Glacier, with possible ascents of adjacent peaks, especially Gauri Parbat (sometimes spelled ‘Ghori Parbat’). Access was made by following the middle section of the Dhauli River to the village of Kosa, from whence they veered to the northwest up the valley containing the Kosa Glacier (‘Raj Glacier’ on some maps).

They established their basecamp on the north moraine, about 2 ½ miles up from the terminus of the ice. The Kosa Glacier is about 6 ½ miles in length (current estimate) and is located to the east of Hathi Parbat (22,070 ft, 'Elephant Peak') and Gauri Parbat (22,007 ft, 'Horse Peak'). The summits of the two mountains are separated by a distance of about 2 miles and neither one had been climbed or in all probability ever attempted up until that time.

In its lowest third, the Kosa Glacier makes a tight S-curve and then straightens out before coming to the base of a massive icefall. The upper Kosa is oriented on a northwest-southeast axis. To the left (due west) is a small but steep tributary body of ice (they refer to it as the 'lower plateau') which merges with the primary glacier at the icefall. The icefall drops 4,000 ft over a distance of 1 ½ miles. Above the icefall was another plateau ('upper plateau') that was nestled at the base of Gauri Parbat. There was absolutely no route through this jumble of seracs and crevasses; their only hope was to circumvent the icefall via the rock slopes on either side.

Once basecamp had been established, it was time to reconnoiter. Roch and a local guide ascended one of five rock spires that were positioned just to the north of basecamp. From the top, they had a good view across the glacier to the lower plateau; from what they observed, getting into the lower plateau was going to be a challenge. Several days later, Roch and one of the Sherpas ascended a 19,050 ft summit located 2 miles southeast of Hathi Parbat. The results of their reconnaissance showed that the only feasible route was on the rock slopes to the south of the icefall, which if they were able to traverse with heavy loads, would lead to the lower plateau. From the lower plateau, there appeared to be a snow-filled couloir through a rock spur that would give them access to the upper plateau. Fortunately, the weather had been good, as they were in a period known as a 'monsoon break.' Although they wanted to come to terms with Gauri Parbat, they were in no major hurry due to the absence of Huber, who was off on his own short excursion.

While Roch, Zogg, and Steuri were reconnoitering the approach to Gauri Parbat, Huber—who was the surveyor—ventured northward to the Rataban Glacier with one Sherpa and a local porter. They trekked up the Rataban Glacier, which forms a large S to the east, and then south of Rataban Peak (20,229 ft, 'red arrow'). Huber and party ascended to a point on the ridge 3 miles to the east of Rataban for their survey; this was followed by an ascent of the peak itself via the Southwest Face (first ascent).

Several days after Huber's party had returned to basecamp, the expedition turned its sole attention to Gauri Parbat. The first order of business was the establishment of a camp on the lower

plateau. On August 11, the four Swiss, five Sherpas, and five local porters departed basecamp. The line of ascent was along the southern slopes adjacent to the lower section of the icefall. The route was mainly on rock slabs; at two sections, fixed ropes were installed to facilitate the transport of the loads. The rock work went well, much faster than excepted; it took several hours to get the loads across the fixed ropes, but the party reached the lower plateau by that afternoon. This small body of ice was heavily crevassed, and sure enough one of the porters broke through a snow bridge; Steuri, however, had him on a secure belay and he was hauled back to the surface in short order.

Camp 1 was established on the northern moraine of the lower plateau, whereupon Zogg, Steuri, and one of the Sherpas took up residence. The remaining climbers returned to basecamp in order to make a second carry the following day. Above Camp 1, the route was up a steep, snow-filled couloir which gave them access to the upper plateau. The couloir was climbed without difficulty the next day. The upper sections of the Kosa Glacier were also very heavily crevassed, and one of the Sherpas took a short plunge into a crevasse before the rope checked his fall. Camp 2 was placed in the middle of the upper plateau at around 19,300 ft. Loads were ferried to Camp 2 by the Sherpas, as the steep terrain in the couloir required the use of crampons which the local porters were not schooled in.

It had only taken three days from basecamp until the four Swiss were able to establish Camp 2. However, the weather—which had been kind to the climbers so far—now turned snowy. This turn of events forced the men to remain in Camp 2 for the next four days, with one exception. Roch did not take confinement to camp well, he and the Sherpa Gombu went off on the third day to attempt a peak to the northeast of their camp. They were able to gain the summit of this unnamed ~21,000 ft peak via a snow-filled couloir. There was no view from the top due to cloud cover, but they had at least gotten out of the tents and away from camp for the day. Although snow fell each of these four days, most of it was melting as quickly as it was accumulating.

On the morning of August 18, the climbers departed Camp 2 intent on reaching the summit that afternoon some 2,700 ft above. It was a short trek along the remaining section of the Kosa Glacier to the base of the summit pyramid; the latter consisted mainly of rock. They proceeded up an arête flanked on the south (left side) by a steep couloir. Route finding was time-consuming, but they made steady upward progress. Near the summit, the route was quite circuitous, which involved crawling across a ledge, navigating around several gendarmes, and then traversing down-sloping rock slabs. At the summit, which they reached around 3 p.m., rocks of the arête gave way to a dome of snow. Views were

limited due to the cloud cover; nevertheless, they were able to obtain a good look at Hathi Parbat, some 2 miles to the south.

The descent was slow due to the steepness of the rocks, but downward they forged. Near the bottom of the arête, they set up a 65-ft repel just as the light began to fade. The final section involved crossing the bergschrund of the Kosa Glacier. Zogg was out in the lead when from nowhere the climbers heard the distinct sound of rocks whizzing past them. Roch noted that some of these projectiles were boulders. Luckily, no one was hit and they were able to resume the crossing of the bergschrund despite the darkness. Several of the Sherpas from Camp 2 met the weary climbers on the upper glacier, relieving them of their packs as the group trekked back to camp in the darkness.

The climbers spent the next several days confined to Camp 2 as another storm engulfed the region. After the storm had abated, the remaining Sherpas came up to Camp 2 in order to help evacuate the camp. The descent back down the steep couloir was challenging with heavy loads, but all concerned made it without mishap. The entire expedition had returned to basecamp by August 21. Phase two had been completed, now it was time for the team to get mentally prepared for phase three.

The expedition trekked to Joshimath for the third time, where its members spent a number of days organizing their next climb. The objective was Chaukhamba I (23,419 ft), sometimes referred to as 'Badrinath Peak,' which lies some 11 miles west of the town of the same name. The mountain consists of four summits positioned on a northeast-to-southwest-oriented ridge, hence the name Chaukhamba, which translates to 'four pillars.' At the base of the western face is the accumulation zone of the Gangotri Glacier, to the north lies the Bhagirath Kharak Glacier, and on the east, there is the Satopanth Bank Glacier. The highest of the four summits is Chaukhamba I.

The mountain had been attempted the previous summer (1938) by an Austrian-German expedition (they also attempted Satnopanth, 23,212 ft). They spent considerable energy reconnoitering all sides of the mountain in search of the best route to the summit. They decided on the Northeast Ridge and hence started to ascend its lowest section. Not long into their climb, a large avalanche swept over their recently made tracks, which spooked their contingent of porters; they refused to continue. With no porter support, the expedition was over.

The Swiss departed Joshimath during the first week of September and made their way to the Bhagirath Kharak Glacier, where they set up their basecamp. From there, three Swiss, Huber was off on his survey, and six porters proceeded to ascend the upper glacier, which gained them access to the base

of the Northeast Face. There was a thin veil of cloud cover but it was otherwise a very warm day as they cramponed up the slope. They successfully ascended a large couloir that was menaced above by a hanging glacier. By mid-afternoon, they reached a steep slope which consisted of exceptionally soft snow; at this stage of the day, this was a serious struggle, especially for the porters. By now, they had transitioned from the face to the Northeast Ridge; they were aiming for a gap higher up in which to pitch their camp. They did not make it to the gap, so they decided to dig out some tent platforms on the ridge at around 18,800 ft as the porters had had a rough day.

Fresh snow fell overnight, so the next morning, the climbers decided to wait for better conditions. They spent a leisurely morning in camp, photographing and rolling snowballs down the steep slope. By late morning, the sun was out and the air was hot, so the three Swiss retired to their tent. Around noon, their camp was hit by a strong blast of wind; Roch grabbed the center poll just as the canvas of the tent was hit by an onslaught of snow. Shortly thereafter, their tent began to slide down the slope; it accelerated, and they could see nothing as they began to tumble over and over inside the tent. The next thing that Roch remembered was the tent being ripped apart by the force of the avalanche, its contents going hurdling down the slope. By instinct, Roch began the swimming motion in order to stay above the moving mass. The expedition came to a halt some 1,650 ft below their camp. They had been on the periphery of the slide; the main mass of snow continued much farther down the slope towards a series of crevasses and then down another steep slope.

Roch found that his legs were buried in the snow but he was able to dig himself out in due course. Steuri and Zogg had also been lucky—they were uninjured as well. The threesome took stock of the situation. First, they had to put on some outer clothing and find some footwear; their climbing boots had been outside the tent prior to the avalanche. Their ice axes had been used to anchor their tent. As they looked up and down the slope, it was littered with debris from their camp. All three tents from their camp had been swept down the slope, so they now had to find the Sherpas and porters.

Near to where the Swiss had rolled to a stop was the Sherpa Angdawa; he was partially buried and spitting blood. They freed him from the snow by digging with their bare hands, as they could not find any gloves or digging implements. While Zogg and Steuri continued to extricate the Sherpa, Roch went off to find other survivors. Some 160 ft lower, he found Sherpa Gombu and a local porter named Baly. Gombu was bent over backwards and also spitting blood, while Baly was semi-conscious and moaning; both men were partially buried. Two additional Sherpas had survived the slide with minor injuries but at that moment, as Roch wrote, “They had so completely lost their heads that they were

incapable of giving any help." The Swiss were able to move the three injured porters onto a piece of torn canvas and cover them with whatever material was available. They looked for Ajitia, another Sherpa, but there was no sign of him anywhere.

The Swiss then decided that two of them would descend to basecamp and summon help and return the next day to the scene of the accident and assist with the evacuation. Why at this juncture they decided to send two of their own and not one is an interesting but unanswered question. It seems that two Europeans tending to the injured would have been a wiser decision. Nevertheless, Zogg and Steuri found some boots and an ice axe, and with the two uninjured Sherpas started down the mountain. Steuri had a hobnailed boot on his right foot and a snow boot with a crampon laced on the left foot. The two Swiss and two uninjured Sherpas descended to basecamp that afternoon, while Roch remained with the injured.

Roch was able to scour the slope for needed gear; the light items such as sleeping bags, sleeping pads, and clothing had remained near the surface. He was able to collect enough gear to keep the injured warm and off the snow. He found a stove and heated some water for a hot beverage. Gombu, who was still spitting up blood hours after the avalanche, died that afternoon. It was a long night, but the sun rose the next day and its welcomed rays warmed the survivors. By late morning, Zogg alone had returned from basecamp—so much for a rescue party. We are not told in the narrative why only one climber from basecamp had returned. Nevertheless, Roch and Zogg prepared Baly and Angdawa for the descent; fortunately, both victims had improved over the course of the night and were able to stand up. In addition, Roch had been able to find enough boots to outfit everyone, although Baly had to wear two right-footed boots.

The descent, which included some icy and steep terrain, was slow and exhausting; there were a number of slips but vigilant belaying prevented further injury. At the base of the face, a contingent of porters from basecamp were waiting to assist for the final leg into camp. While the climbers were returning to basecamp, they also got the ominous news that World War II had commenced. Less than a week later, the expedition was in Joshimath, whence they made the long trek back to the trailhead at Ranikhet. As it turned out, Angdawa and Baly were regaining strength each day. X-rays showed that Angdawa had broken his shoulder in two places, while Baly had suffered bruising and a concussion.

The 1939 Swiss Garhwal expedition had started out strong and upbeat; they were able to make three significant first ascents—Dunagiri, Gauri Parbat, and Rataban—as well as a handful of minor

peaks. The survey work of Huber provided much-needed topographic knowledge of the Kosa Valley, which had been lacking. They had also been able to climb during the monsoon, although as it turned out, 1939 was a mild monsoon in terms of precipitation. The two deaths on Chaukhamba were tragic but no one's fault—a pattern that would be repeated with higher frequency in the coming years as more and more expeditions ventured into the mountains. Roch returned to the Garhwal in 1947; that expedition made six first ascents. He was also a member of the 1952 Swiss Everest expedition, which of course nearly made it to the summit.

Chapter 23

The Triumvirate, Part 1

Three Brits—Eric Shipton, Harold Tilman, and Frank Smythe—are synonymous with climbing and exploration of the Karakoram-Himalaya. Their heyday was the 1930s; despite the global economic crisis of the period following the Wall Street Crash of 1929, they managed numerous expeditions. Each man participated in multiple attempts on Everest, Smythe on Kangchenjunga, all three climbed extensively in the Garhwal, and finally, Tilman and Shipton made several long excursions in the Karakoram. What separates these three from most, but not all, of their contemporaries—besides the sheer number of expeditions they participated in—was their ability to endure long periods of hardship.

In addition, all three wrote about their exploits shortly after the conclusion of each expedition, and their writing is entertaining. Their accounts are witty and they had no problem making fun of each other when it was justified. They were the masters of understatement—able to downplay difficult situations but still give the reader a hint that it was not all fun and games. And finally, their writing style was descriptive; they not only described the landscape in such a manner that the reader can visualize it, but they also recreated vivid images of the people they interacted with, whether they were local porters, villagers, or their partners in crime—the Sherpas.

In this chapter, we will discuss three of their journeys: Shipton and Tilman's 1934 Garhwal Himalaya adventures, as well as their 1937 expedition to the Central Karakoram. And finally, Smythe's summer of climbing and wandering the peaks and valleys in and around the Garhwal area, which also occurred during the summer of 1937. These three excursions exemplify the careers of these men and what they were ultimately seeking when they left civilization behind and trekked into the hills. Fortunately, many of their books are still in print; so, if you have not read any of their works, then you should make the effort.

The triumvirate were not innovators of new gear or some alternate climbing technique, but they did think about the 'philosophy' of mountaineering. They are remembered for being strong exponents of the 'small expedition' and 'less is better' *modus operandi*. The call of the mountains to them was about exploring unknown regions and experiencing the raw power of nature away from the trappings of modern civilization. Yes, they were mountaineers and they certainly aimed to reach as many summits—preferably virgin summits—as their legs would carry them. But in many respects, the journey to the summit was as important and, in some cases, more important than the view from the top.

1934: Shipton and Tilman's Summer of Adventure

In May of 1934, Shipton and Tilman embarked on an ambitious program of exploration and climbing that sealed their notoriety in the annals of mountaineering history. As it turned out, the summer of 1934 can be broken into three phases; they did not plan it that way, but they were extremely flexible when it came to their mountain wanderings. This was still early in each of their Karakoram-Himalaya climbing careers; however, by the end of this summer, their reputation as 'budget climbers' had been established. Their proposed budget for the summer was £300; in the end, they spent a little less than this massive sum. This covered five months in the field, plus the wages for three Sherpas. In addition, what they were able to accomplish, even though they did not climb well-known peaks or cover a lot of miles—for much of their climbing was 'horizontal'—was nothing short of amazing. The terrain they managed to penetrate was in many cases impenetrable to most *homo sapiens*. In the end, their 1934 exploits put them in an elite class of mountain explorers.

The general outline of this expedition had been rolling around in Shipton's mind for several years. The objective was to get away from large expeditions and "… to wander with a small, self-contained party through the labyrinth of unexplored valleys, forming out plans to suit the circumstances, climbing peaks when opportunity occurred, following up our own topographical clues and crossing passes into unknown territory," Shipton wrote in his book *Nanda Devi* (1936). Along this theme, Smythe called Shipton "… the high priest of the small Himalayan party …"

The specific goal was to travel to the Garhwal region and work their way up the valley of the Rishi Ganga into the Nanda Devi group (now known as the 'Nanda Devi Sanctuary'—NDS, a national park), survey the terrain, and climb at will, possibly making an attempt on the 'Blessed Goddess" (Nanda Devi) itself or, at a minimum, reconnoiter potential climbing routes. The NDS had never been violated by the foot of a human; a few lucky souls had been on the outer rim, from which they were able to look down into the *inner sanctum*. The reason no one had been there is that access was, and still is, difficult to say the least.

Nanda Devi (25,643 ft) is the focal point of this circular array of mountains and glaciers; it is joined to East Nanda Devi (24,379 ft) by a long narrow ridge. A high wall of mountains encircles the sanctuary (often referred to as the 'barrier'); this wall is steep and glaciated, and often heavily corniced. There are a number of well-known mountains located on the barrier or just outside. This includes Trisul

(23,360 ft) to the southwest, the granite spire of Changabang (22,520 ft) to the northwest, Dunagiri (23,182 ft) a little farther to the northwest, and Nanda Kot (22,509 ft) to the southeast. There are no easy or even moderately difficult passes that allow access to the sanctuary except for a single gap on the southwest. The Rishi Ganga River emerges from the Dakshini Rishi Glacier, which is located on the south side of Nanda Devi; the cut which the river has carved out of over the millennium is the only 'weak' point through the barrier. The river flows some 14 miles to the west, where it merges with the Dhauli River. The valley formed by the river is a very deep gorge over much of that length.

Tilman and Shipton had climbed together on Mt. Kenya in the late 1920s, as both were working on plantations in Kenya. They had gotten on very well during those three expeditions, having the same climbing/exploring philosophy; in other words, they were cut from the same piece of cloth. In due course, Shipton had moved back to England while Tilman remained in Kenya. They had not seen each other for several years when out of the blue Shipton received a letter from Tilman. In that letter, Tilman said that he was traveling by ship from West Africa to England. In fact, Tilman had just bicycled 3,000 miles across central Africa, from Uganda through the Belgian Congo and French Equatorial Africa, and finally into the French Cameroons. Like all things Tilman, it was a budget affair; his bicycle had a previous owner(s) before he purchased it, and during his journey he often slept on the side of the road and ate whatever local foods (mostly fruit) he could forage or buy with the little money he had.

Realizing that his old climbing companion was headed northward and knowing that he had no agenda once he returned to England, Shipton recruited Tilman for the Garhwal expedition. Although Shipton wanted to keep the party number as small as feasible, he knew that a few Sherpas would be invaluable, even though they would have to be transported from across India (the Darjeeling area). He selected three: Angtharkay, Pasang, and Kusang; the first two Shipton knew from previous expeditions, and Kusang was young and an unknown quantity, but became a vital member of the team in short order.

Although the NDS had not seen human footprints, a number of climbers had certainly tried to be the first into the *inner sanctum*. Most of the activity had been to the east, where a well-used trail led up to the village of Milam and onwards to Tibet. Even the imposing Rishi Ganga had seen several attempts. The first-known attempt was in 1885 when Graham and his two Alpine guides, Emil Boss and Ulrich Kaufmann, spent weeks trying to work out a route. They had at first tried to follow the river strait up the gorge, but walking the riverbed was not feasible for any length—one was always forced above the river,

thousands of feet above. The problem was that the sides of the gorge were often vertical or near vertical.

Their next attempt was to head north out of the gorge, bypassing the difficult (impossible) lower section, travel over a ridge near Durashi, and then drop down into the gorge for the final couple of miles. At times the 'track,' if it can be called that, was some 5,000 ft-plus above the river. It was not uncommon for the climbers to use tuffs of vegetation as handholds. Rain and at times snow hampered their efforts; the desertion of local porters also didn't help. In the end, the Graham expedition gave up the effort several miles short of reaching their goal.

The next attempt took place during Thomas Longstaff's 1907 Garhwal expedition. After climbing Trisul, Longstaff and two Gurkha porters made an effort to penetrate the upper gorge. Recall that they had already crossed the Rishi Ganga in the middle section in order to gain access to the north side of Trisul. As we saw, the trio dropped back down to the river from the Trisul Glacier and then began to work their way upstream … at least for a short distance. Longstaff and Co. quickly came to an impasse; the walls along the river were just too steep. Furthermore, the riverbed, with the combination of water and boulders, was not navigable even on foot. Longstaff turned around at a point roughly corresponding to Graham's furthest penetration.

Before leaving England that spring, Shipton consulted Longstaff on the route. By the conclusion of that meeting, Shipton certainly knew that this was not going to be a pushover, even though the gorge was only 14 miles in length, some of which would be bypassed. Even to get to the western end of the gorge would require a bit of a trek. Today, there is a road that follows the course of the Alaknanda River from Hardiwar to Badrinath, passing through Joshimath; the latter town is the jumping-off point for anyone attempting the gorge. This road, which follows the old pilgrim path, had not been constructed as of this time. The alternative was a ten-day trek from the end of the road at Baijnath to Joshimath, the latter being one of Garhwal's principal settlements. (The trekking route that most expeditions used prior to World War II via the Kuari Pass is located east of the modern road.)

During this first part of the trek, which commenced in May, the expedition was plagued at times by flies; but on the positive side, the weather was dry and the view from Kuari Pass of the surrounding mountains had lived up to its reputation. After resupplying in Joshimath, mainly for the needs of the porters, the small expedition proceeded eastwards up the lower Dhauli Valley for 10 miles before coming to the confluence of the Rishi Ganga and Dhauli rivers; this was the start of the gorge proper.

Shipton knew from his conversation with Longstaff that the lower gorge was impassable at river level, so they opted to take the high route on the north that Graham had pioneered to Durashi. This area served as a high-level grazing ground (~14,000 ft) for the local shepherds once the snows had melted—typically, by late June or July.

The trek up to Durashi gave them their first taste of the difficulties that lay ahead; in this case, it was snow and occasional stretches of ice. The snow was soft and deep in places; the crux was a half-mile stretch of trail across a ledge that was covered by snow and ice. This is how Shipton described the traverse to Durashi: "The cliffs were exceedingly steep and dropped in an almost unbroken plunge for some 8,000 ft …" The overloaded porters, despite Shipton and Tilman's apprehensions, were up for this challenge; they made quick work of the traverse.

Shipton had more of an inclination for survey work than Tilman; the latter loved to 'complain' about the added weight and toil of carrying survey gear from one peak to the next. Shipton had brought a plane-table so they could check and suggest corrections to the most current Survey of India maps. They unpacked the plane-table for the first time on a small summit above Durashi which "commanded a fairly comprehensive view," as noted by Shipton. They spent two hours on the summit, descending with a greatly improved understanding of the local geography.

The next part of the route was a steep descent to the Rishi Ganga itself. Along the route, they passed through another exceptionally beautiful alp, called 'Dibrughita' by the local shepherds. They had hoped to spend the night there, but due to a lack of water, had to push onwards—in this case, downward. The next day, after further descent, some of it quite sketchy, and after Shipton got hit on the back of the head by a rock dislodged by one of the porters, they came to the Rishi Ganga. This was the spot where Longstaff's 1906 expedition had crossed to gain access to Trisul. The slopes above the river were of course steep, and at times cut by cliffs and deep gullies; in places, there were thick stands of thornbushes or bramble. On the steep ground, the vegetation could be used as handholds or for footholds.

After spending a night at the edge of the river, they decided that they would try their luck on its south side. Crossing the river involved an easy boulder hop, but that was the only easy part; movement along the slopes was slow and difficult, and the porters were becoming disillusioned and the weather was deteriorating. By the afternoon, they opted for yet another descent to the riverbed. The Rishi Ganga at this juncture was not easy to cross, so the expedition cut down some trees and made a bridge.

Fortunately, they made excellent time on the north side, as there was a section of pine forest with no undergrowth. They camped that night at the confluence of the Rhamani River with the Rishi Ganga; at this point, they were about 4 miles from the entrance of the NDS.

It rained and snowed all that night. By morning, the weather had improved, so Shipton and Tilman, after crossing the river on a series of rocks deposited in the river by a landslide, spent the day on reconnaissance. They climbed above the river, making slow progress upstream. They reached a spur that availed a full view of the upper gorge; at first glance, the way forward did not look promising, but they pushed on. Soon, they were on slabs of rock that were steeply inclined towards the east but passable. At one point, they discovered a foot-wide ledge that overhung the river, some 300 ft below. "The passage along it was exhilarating," wrote Shipton—no doubt he was understating the difficulties.

Shortly after the traverse, they dropped back down to the river; it appeared that they could make additional forward progress by walking up the riverbed. They ended up fording the river six times in order to stay low; by now, it was mid-afternoon, and since they were still on reconnaissance, they had to turn around and head back to camp. This involved six additional fords in cold, glacially silted water. The route would be difficult for heavily loaded men, so they decided to ferry smaller loads beginning the next day. The local porters had been paid off, so the loads had to be carried by the Sherpas, Shipton, and Tilman. It took three days to ferry their loads, but they were slowly making progress along the chosen route.

At one point, they spied a large cave across the river, an ideal location for a base from which to tackle the last section of the gorge. It had been raining and snowing, so a shelter from the elements was highly desirable. When it came time to cross the Rishi Ganga, yet again, the force of the water was stronger than they had encountered previously. Shipton led the way; "the force of the current was terrific," he wrote; rocks carried by the strong current hit his legs. At one point, the water was up to his waist, but he was able to make it across with a load and a rope tied to his waist. He secured the rope and waited for the Sherpas and Tilman to cross. The others were considerably shorter in stature than Shipton and had trouble. Angtharkay in particular struggled with his load; he was the shortest of the Sherpas and Europeans. It was not long before his load became waterlogged; at one point, he stumbled, and while hanging onto the stretched rope with one hand was submerged up to his neck. Pasang had a hold of one of Angtharkay's arms, so was able to drag him to shore. In the end, all the loads and personnel were transported across the river; however, many of the loads and all of the participants

were wet, the latter spending the next several hours in a feeble attempt to warm themselves by a smoldering fire as they sat in light rain.

The following morning, they divided into two groups; the one led by Tilman would work the southern bank, while the other led by Shipton would try their luck on the northern bank. Shipton and Pasang followed a number of false leads throughout the day and ended up back at camp frustrated. Late that afternoon, Tilman and Angtharkay returned as well, but the news was good for a change. They had climbed a route some 1,500 ft above the river and could see that the way ahead led directly into the sanctuary.

Perseverance paid dividends; on the morning of June 6, this mini-expedition set foot within the sanctuary of the Blessed Goddess. “We were now actually in the inner sanctuary of the Nanda Devi Basin, and at each step I experienced that subtle thrill which anyone of imagination must feel when treading hitherto unexplored country,” Shipton wrote. It had taken ten days to cover the 24 miles from Joshimath to the western edge of the NDS, a testament to the difficulty of the terrain.

The next three weeks were spent exploring this truly virgin landscape. One of their objectives was to find an alternative route out of the sanctuary. Overall, the weather was reasonably good considering that the monsoon was imminent. They worked their way up to the western base of Nanda Devi and then proceeded to the north, which gave them access to the Uttari Nanda Devi Glacier. This body of ice lay at the foot of the sweeping northern face of the mountain. Several days later, the team was able to climb the ridge that formed the northeastern barrier; the view overlooked the Milam Valley to the east and the Milam Glacier to the northeast. They estimated their elevation at 20,300 ft (they were probably near Sakram, 20,528 ft).

Arriving back at their camp (they called it ‘Glacier Junction Camp’), located on the north side of the Uttari Nanda Devi Glacier, Shipton was suddenly inflected with a fever that lasted for the next thirty-six hours. He had alternating periods of chills and fever. Several days later, when it had run its course, with the assistance of the Sherpas he was able to slowly make his way back to their advanced basecamp, located on the west side of the sanctuary. Never able to lie around, Shipton—although still weak from his fever—insisted that they push back up to the eastern ridge in order to ascertain the possibility of a route out of the sanctuary. A couple of days later, they were standing back on the narrow ridge (probably just south of Bamohu, 20,689 ft) looking down 2,000 ft of snow-covered rocks. The east-facing

slopes looked climbable but the potential for avalanches was too great for them to take the risk. They temporarily dismissed the idea of an exit over the northeastern section of the barrier.

Their next line of inquiry was to head due north up the Uttari Rishi Glacier (6 miles in length), towards Rishi Pahar ('Peak of the Saint,' 22,939 ft). Over the past several days, the weather had been a mix of clouds and sun; as Shipton noted, it was good for travel but not conducive to surveying, and they could only hope for an improvement. They trekked north with enough food for six days; their plan was to wait out any bad weather in an attempt to come to terms with the survey. With several days of optimum conditions, they would be able to complete it in this sector. Note that since no one had set foot inside the NDS, most of its topographic features were unnamed at this time; hence Shipton and Tilman assigned names as they thought best. Most of the time, they assigned the peaks on their map with numbers.

Shortly after leaving Glacier Junction Camp, Tilman complained of being sick; he had the same symptoms as Shipton had experienced five days previously. He would not, however, contemplate a return to camp, and so he slowly forged ahead. Due to the complexities of the route up the glacier, and Tilman's slow pace, they were only able to make 3 miles that day. They set up their small camp on the rock-covered glacier.

The next morning, Shipton and Pasang reconnoitered up the glacier while Tilman rested in camp. At first, the route was easy-going, but then they got into a zone of deep slush where numerous rivulets and streams crisscrossed the surface of the ice. Above the slush zone, the glacier divided into two icefalls. They spied a possible route along the edge of the largest of the two icefalls, but with snow now falling, they retreated to camp. The following morning, Tilman's health had improved, so all five members made their way up the glacier. With improved weather (but only temporarily), they were able to determine that the smaller icefall on the left (to the northwest) was part of a glacier which originated on the north side of Kalanka (22,739 ft). They nevertheless forged a route along the side of the larger icefall, which was still part of the Uttari Rishi Glacier. It was now snowing with a vengeance. The slope they were on was steep, so they had to hack out their own platform in order to pitch their tent; Angtharkay and Kusang then returned to the lower camp with instructions to return in three days.

Dawn the next morning revealed clear skies, so Tilman, Shipton, and Pasang made an early morning start. For the first three hours, they weaved their way through a maze of crevasses and broken ice, after which they emerged on a substantial plateau of ice which they estimated to be just over

20,000 ft. They were now at the base of two mountains, with a prominent saddle separating the two. They climbed up to the saddle and looked down the other side some 4,500 ft to the Bagini Glacier. In describing the scene, Shipton wrote, “It looked as though, if a stone were dropped, it would touch nothing until it struck that glacier, up which Dr. Longstaff’s party had made their way twenty-seven years before.” (Longstaff’s party traversed the col to the west.) Despite a cold wind, the weather was clear, affording them a tremendous view of the peaks of northern Garhwal.

With two virgin summits looming overhead, the climbers could not resist the call. They started to climb towards the summit to their right (Rishi Pahar, 22,939 ft; they refer to it as ‘Peak 110’). Although the climb was straightforward, the snow was hip-deep in places. After an hour of toil, they had only gained about 300 ft, and with the weather rapidly deteriorating, they gave up their summit attempt and headed back to their high camp.

The next morning, with Pasang remaining in camp, Tilman and Shipton got an early start in their second attempt to climb Peak 110. They took a different route this time, and in the end, they were defeated by icy slopes; cutting steps was taking too much time and energy. They had managed to clear 22,000 ft but well shy of the summit and the view it offered. They retreated to camp and with the help of all three Sherpas, moved back down to the Uttari Nanda Devi Glacier, where they spent the next several days further surveying the vast landscape. It was now the third week of June and the monsoon rains looked as if they were going to begin in earnest; with their food supplies starting to run low, they knew that their time within the sanctuary was quickly drawing to a close.

True to form, they had a difficult time pulling themselves away from the captivating surroundings. Hence, they decided to spend several additional days exploring the northern sector of the sanctuary before they had to retreat down the Rishi Ganga. By now, they had given up the idea of finding a suitable exit point along the eastern barrier. It was at this time that Tilman began to experience foot trouble, so Shipton ventured on his own (with the plane-table) back up to a point on the eastern ridge, not far from their previous two ascents. The weather was clear, so he was able to spend an hour filling in some of the missing details on their map with the use of the plane-table. It was soon discovered that Tilman’s foot troubles were being caused by a caruncle on the upper surface. Not a pleasant outlook considering he had days of difficult trekking through the gorge in his near future.

The five members of the expedition, once again reunited, began the homeward journey. All the rivers were now very high due to a combination of snowmelt and rain. The party had a difficult time

crossing the river that emerged from the terminus of the Uttari Nanda Devi Glacier. It was a struggle, but in the end, they managed without anyone succumbing to the rushing water. They camped that night near the western exit of the sanctuary.

It took them three days to descend the gorge; on day one, light rain fell, but by day three the intensity had increased. Enroute, they stashed some of their gear within the gorge; this included the plane-table, rope, and cooking implements, which they would pick up in August when they returned. By now, they had formulated a new strategy for the remainder of the summer—they would return to the sanctuary in August in order to conduct a survey of the southern sector and take a closer look at climbing routes on the Blessed Goddess. Between then (late June) and August, they would find some mountain diversion to keep themselves occupied.

Tilman, despite his painful foot, was able to keep a stiff pace; they made a speedy retreat because after spending so much time searching for one on the way in, they practically had it memorized. They were also guided by a number of cairns they had constructed on the inbound leg. Additionally, they were motivated to reach the nearest village because they were running out of food. They were back in Joshimath some six weeks after departing its fleshpots. It had been a difficult trek but extremely rewarding.

The Valley of No Return, Almost

Phase one of their summer was now completed. Shipton and Tilman had big plans for phase three later in the summer—that is, the return to the sanctuary—but they had to derive a program for the intervening weeks. Four days in Joshimath was more than enough time for the expedition to enjoy its limited offerings. In the hope of escaping the monsoon rains, they planned to explore the Kedarnath-Badrinath group of mountains as part of phase two. This region lies in northern Garhwal and is the source of three important tributaries of the Ganges River; in fact, the Alaknanda River, one of those tributaries, is often cited as the true source of the Ganges (others cite the Bhagirathi River). Since these rivers are considered holy in Hindu mythology, it is only natural that there would be a number of important temples in close proximity: Badrinath, Kedarnath, Yamunotri, and Gangotri.

Shipton and Tilman were naive in thinking that they would escape the monsoon rains. It is true that as one travels north and west in this part of the Himalaya, the monsoon rains diminish in frequency and intensity. However, one has to travel to Ladakh, several hundred miles to the northwest, before this

becomes a reality. This mistaken meteorological myopia would become clear to them in short order. It is unclear why Shipton in particular thought they could escape the monsoon by traveling less than 20 miles to the northwest from Joshimath. Three years previously—that is during the second half of July and early August of 1931—Shipton had spent time in the mountains just to the north (up the Arwa Valley) of their intended route, with Smythe and others. They had trekked over there after their successful climb of Kamet. During that period, they had experienced plenty of snow and rain, hence Shipton would have known better. In all fairness to Shipton, he probably figured that rain and snow would hamper their mobility during phase two, but it was better than the alternative, which was to wait around or leave the region altogether.

With their bellies full of the culinary offerings of Joshimath, the expedition trekked north along the well-trodden pilgrim path to the town of Badrinath, site of one of the important Hindu temples dedicated to Vishnu. They only spent a short time in Badrinath before continuing onto the village of Mana a few miles to the north. They had trouble hiring the requested number of porters needed to transport their supplies to the Bhagat Kharak Glacier, the starting point of their explorations. (Modern maps label it as 'Bhagirath Kharak Glacier'—BKG. This is the same glacier from which the 1939 Swiss expedition initiated their attempt on Chaukhamba.)

After some time had elapsed and more agonizing negotiations with village authorities, the requested porters arrived, and progress was made towards the glacier. The access point was a valley extending to the northwest of Mana down which the Alaknanda River flowed. There was trouble right from the start; the expedition was forced to cross a sizeable tributary of the Alaknanda River. The expedition had been warned by the inhabitants of Mana that the only suitable crossing was to walk a mile upstream along the tributary and then cross; under no circumstances should they attempt to cross at the confluence. When the party came to this particular reach of the river, the crossing looked harmless to them; in addition, no one wanted to add 2 miles (1 mile up and 1 mile back) to the itinerary if not absolutely necessary.

Henceforth Pasang tied a rope around his waist and waded in with a load. He stumbled and was submerged; he had been using a thump line so thankfully the load fell off into the water and not around his neck. He was dragged to shore via the rope, and was bruised but otherwise unhurt; however, he had lost his ice axe in the process. Tilman, seeing the load floating down the river, decided to retrieve it, or more accurately, he attempted to retrieve it. It floated past him but made landfall some distance downstream on some protruding rocks. In the failed rescue attempt of the load, Tilman also lost his ice

axe. Neither axe was ever recovered, and with no replacements, this put a strain on future climbing activities. Eventually, they all crossed without anyone drowning.

With the aquatic drama behind them, the party moved up along the northern lateral moraine of the BKG. They set up camp at ~16,000 ft and from there they could see that the head of the glacier was protected by a steep headwall; there was no easy pass that would allow them to make the crossing to the west. Their immediate objective was to cross over to the Gangotri Glacier Basin. However, they eyed four tributary glaciers to the southwest, which they hoped would provide the needed pass. (Current maps and satellite imagery only indicate three glacier tributaries.) They climbed a 19,000 ft peak (possibly to the north towards the Arwa Ridge) that offered an expansive view; what they saw as regards potential crossing points was not good, however. The next day, they ventured onto the upper BKG and their fears were confirmed—there was no safe or remotely safe route to the west.

Being Shipton and Tilman, they were adaptable, hence they switched to 'plan B.' Shipton, now recalling his days in the Arwa Valley three years prior, remembered seeing a pass that he now thought might lead to one of the tributary glaciers of the Gangotri Glacier. This pass was located northeast of Satopanth and since they had reached an impasse in their current position, it was worth investigating. The expedition ferried loads over the ridge just to the west of Arwa Spires (various elevations but typically around 20,500 ft). In the process, they were able to summit a peak on the ridge (unnamed) with an estimated height of 21,500 ft. Up until now, the monsoon rains had been on holiday; however, the clouds and associated rain-snow now returned in earnest.

The actual route they took is difficult to trace, as there is no map accompanying Shipton's narrative; since many of the glaciers and peaks had no names, the climbers labeled them at will. From the narrative, we know that after crossing the ridge they traveled on an unnamed glacier to the west and then north over a col. The first body of ice is still unnamed (at least I could not find a name for it), while the col is probably just to the east of Chandra Parbat (22,064 ft). There is an outside chance that they used the Kalindi Khal, which is now used by trekkers making the Gangotri-Mana Traverse, but it seems a little too far north from Shipton's route description (see H. Kapadia, *The Himalayan Journal*, Vol.54). To the north of the col is Seta (Shewta) Glacier, which is a tributary of the Chaturangi Glacier. The latter flows due west for some 5 miles before depositing its load into the much-larger Gangotri Glacier.

The party made good progress reaching the Gangotri Glacier in just over two days; Shipton's memory had served him well. From their westernmost camp, Shipton and Tilman now ventured on their own for the day; they headed northwest towards the terminus of the glacier. Since time immemorial, there has been a Hindu holy spot at the terminus of the glacier that goes by the name of 'Gaumaukh,' translated as 'Cow's Milk' (elevation is ~13,250 ft and it is also spelled 'Gomukh'). The site is an ice cave from which the brown-silted, turbulent waters of the Bhagirathi River emerge. Tradition has it that this is the origin of the holy river Ganges, although that continues to be in dispute, as others claim that that distinction belongs to the headwaters of the Alaknanda River. In any case, Shipton and Tilman paid their respects at Gaumaukh and then immediately trekked back up the Gangotri Glacier to their camp, where the Sherpas who had been granted the day off were enjoying a campfire.

The next three days saw the expedition retrace its path towards the Arwa Basin. There was a brief period of clearer weather, which allowed for the plane-table to be unpacked and put to its proper use. It is unfortunate that Shipton did not share the results of this labor in his narrative in the form of a map, as it would have clarified the lay of the land for future generations. The fivesome were back in Badrinath by the afternoon of August 2 without any additional mishaps on the return journey.

Initially, Shipton and Tilman had planned on returning to the Rishi Ganga on or around August 10 for their second trip into the NDS. In this region, the monsoon rains typically last until early September, sometimes later; so why they selected the second week of August to resume the NDS exploration is unknown. However, by now they were totally absorbed in the exploration of the Badrinath-Kedarnath ranges, and hence were willing to delay their start on the second half of their Nanda Devi project. Their new objective was to cross the range into the Kedarnath Valley via the upper Gangotri Glacier Basin. As always, the Survey of India map they possessed was capable of enlightening them of the prominent features along their proposed route, but the fine details were absent—which, as we will see shortly, produced a considerable amount of grief.

After two days in Badrinath, the party—with the assistance of porters from Mana—trekked to the northwest following the course of the Alaknanda one more time. At the head of the valley, they kept to the left this time and proceeded up the southern lateral moraine of the Satopanth Glacier ('Good Faith' Glacier). The trek on the lower section was easy and they were able to make rapid progress. The upper section, however, was a jumble of boulders and ice, as some five tributary glaciers entered from the south. They passed beneath the northern slopes of Nilkantha (21,640 ft).

When they were about half a mile from the crest of the Satopanth Glacier, they dismissed the porters and camped. In the morning, they would begin the ascent to the col located at the head of the glacier. The only plausible route was up an icefall, which they began to ascend the following day. As the route got steeper, they had to cut a lot of steps in the ice; with the heavy loads that all five were shouldering, this was difficult work (the three Sherpas were still part of the team but they had dismissed all of the local porters). It was also sunny, which made the air just above the ice seem hot. The heat did not last long and in short order the route became heavily crevassed. At one point, they came upon a broad crevasse which they could not find a route around or across. As an alternative, they headed towards a rock outcrop located to one side which they eventually were able to ascend. At some point during the day, Tilman slipped, hurting his already bruised ribs. By the afternoon, snow started to fall as well; it was time to pitch camp. They spent that night listening to avalanches, which roared down past their chosen campsite.

The next morning, snow continued to fall, accompanied by poor visibility. They did not let the elements deter their plans for the day; they packed up the wet tent and pushed upwards. By afternoon, they reached what appeared to be the col (~18,400 ft) but with limited visibility it was difficult to ascertain the lie of the land; were they on Satopanth Col or not? When in doubt, camp. That evening, the five of them huddled in a single tent; they soon discovered that their only stove had a leak, which required constant pumping. This adventure was starting to turn from a 'holiday' trek into a serious mountaineering epic. As it turned out, they were indeed on the col, but they were not directly above the head of the Gangotri Glacier, which they had been aiming for. They were actually a little over a mile east of Chaukhamba III (22,949 ft). They were separated from the Gangotri Basin by the high ridge that ran from Chaukhamba I to the north through Chaukhamba II (23,196 ft) and southward to Chaukhamba III. To their west, the ridge ran to Chaukhamba IV (22,441 ft); in other words, there was no route into the upper Gangotri Basin.

The next morning, with no improvement in the weather, Shipton and Tilman headed towards the southwest in order to reconnoiter the route. The ground soon started to slope downhill and shortly thereafter they came to the top of an icefall. They stopped for thirty minutes, after which the cloud cover dissipated, allowing the men to get a fix on their surroundings. Far below was a cloud fill valley, but it became obvious that they were descending into the Kedarnath Basin, not the Gangotri Basin. That was not upsetting, since the Kedarnath Basin was their ultimate goal anyway. Immediately below, they could see that the icefall which they were now atop extended down for what they judged to be 1,000 ft.

Below that was a flat section of ice which gave way to what appeared to be another massive icefall, but which was obscured by the cloud cover.

The two climbers headed down through the higher icefall, weaving a course through the crevasses and seracs. Encouraged by their rapid progress and seeing what they thought was a route, Shipton and Tilman hurried back to camp and immediately packed up their soggy belongings. At this point in time, there seems to have been no discussion whether they should proceed down into the Kedarnath Basin or retrace their steps. An hour or so later, when the five of them had entered the icefall, the clouds had enveloped the slope, making route finding difficult. In due time, they exited the lower icefall and were now on the relatively flat section of the glacier they had eyed that morning from above.

It did not take long for them to begin to tackle the lower icefall—first, on the right-hand side and then, when that route was blocked by an impassable crevasse, they moved over to the left. Soon, they were confronted with a very steep gully that looked—if they could descend it safely—as if it would give them easy access to the terminus of the glacier. By now, it was late in the afternoon and the Sherpas took the initiative on route finding. After a repel and some downclimbing, they were able to see the remainder of their route down the ice, and it looked feasible. The fivesome decided to wait until the next morning to continue the descent, as the next part involved downclimbing a steep gully which was menaced by some leaning seracs.

Dawn brought with it generally clear skies. After a short but tricky traverse, they spent the next two hours getting the loads and themselves safely down the gully. Over the remainder of the morning, they made good progress down the final stretch of the glacier. Immediately after leaving the ice, they plunged into a tangle of 8-ft-high undergrowth; it was thick, so thick they could not see where to go. They used their ice axes to hack their way forward. By evening, it was raining again and they had reached a steep drop-off of over 1,000 ft; most of the terrain consisted of rocky outcrops festooned with vegetation. They established camp above the cliff and while attempting to dry their wet clothes by a smoldering fire, Tilman and Shipton held a council of war.

They had by now come to the realization that downward progress was not going to be easy; in fact, it dawned on them that it very well might turn out to be extremely difficult. One prime concern was that food supplies were already running exceptionally low. In Shipton’s account, he did not explain why they were running low on food; evidently, they believed that after the tough trek in the Rishi Gorge,

that this traverse would be easy, over in a few days. They were also under the false impression—given by a few locals in and around Badrinath—that there was or had been some type of trail to follow. Sitting in the rain that evening, they discussed the possibility of climbing back up the glacier to the pass and then retracing their steps to Badrinath. After hours of discussion, they decided to continue with the traverse, whatever may become of it. Shipton, writing post-expedition, noted: "… I think undoubtedly the wisest plan would have been to go back up the ice, and several times during the week which followed, we sincerely wished we had done so."

As the above quote suggests, the descent was a nightmare. Thick undergrowth was one problem, as were the many side gullies and streams that dissected the slopes they were trying to downclimb or traverse. On many occasions, they had to climb back up steep ground they had just descended, in an attempt to traverse a particularly ugly bit of terrain. On one occasion, they spent all morning on a traverse only to turn around in the afternoon and retrace their steps, camping in the same spot they had the previous night.

At one point, they had to cut down several pine trees in order to build a bridge to cross one of the local torrents. To add to their misery, it rained nearly constantly and within two days of leaving the glacier, they were eating bamboo shoots and fungus; even then, the fungus ran out and the shoots were getting scarce as they moved to lower elevations. On day five of the forest trek, Pasang, who was cutting a tree in a steep gully, was hit on the arm and foot by a large rock that had become dislodged. His foot was severely injured but fortunately for everyone he could limp along. For the remainder of the trek, he had to struggle to keep up with the others, even without a load.

On the afternoon of day eight—that is the eighth day after leaving the glacier—they stumbled into a village, if three houses can constitute a village; in any case, it was the first sign of habitation they had seen in over two weeks. They took up residence in a barn after the goats had been evicted. For food, the villagers could only muster one cucumber, a handful of apricots, and 4 lbs of flour. The next day, the expedition was able to resume its trek on an established trail; however, as they continued to descend, they found that trails radiated in every conceivable direction. They eventually had to hire a guide. Three days later, they reached the town of Okhimath (the modern spelling is 'Ukhimath'), which straddled the pilgrim trail to Kedarnath. At last, they were able to buy some 'real' food in the bazaar and sleep in beds (in a temple) and exchange their wet clothes for dry ones. A local doctor did what he could for Pasang's crushed foot.

Shipton did not give a route description, so it requires a bit of Alpine forensics to figure out what ground they covered. From the Satopanath Col, they possibly descended the glacier that is today called the 'Panpatia,' to the south. As an alternative, they might have downclimbed a narrow body of ice (unnamed) just to the west of the Panpatia. In any case, once they left the ice, it is highly probable that they were in the valley due south of Chaukhamba III. The upper valley is oriented from northeast-southwest and then lower down almost north-south. The river that they followed (unnamed on any map that I could find) is the northern tributary to the Madhmaheswar River which flows from the east-northeast. This valley leads directly to Okhimath. This district is also referred to as Madhmaheswar.

After four additional days of trekking, the weary travelers finally reached Joshimath, their third visitation to this humble town. While in Okhimath, Shipton and Tilman had discussed the possibility of making the journey to the temple at Kedarnath, but the traverse had taken a lot longer than they had anticipated and the season was well advanced (August 26). Despite the epic descent from the Satopanath Col and the physical toll it took, the party—even the Sherpas—were not lacking in their desire to return to the sanctuary of the Blessed Goddess as soon as they could make the needed arrangements. As it turned out, the rains during their Badrinath-Kedarnath traverse had been the heaviest that locals had experienced in many years.

Since the epic crossing by Shipton, Tilman, and the Sherpas, there have been several attempts to repeat this feat of navigation and determination. A good account can be found in *The Himalayan Journal*, Vol.55, 1999 entitled "Shipton's Lost Valley," by M. Moran.

Return to the Blessed Goddess

On August 30 the Sherpas, including Pasang, despite his hurt foot, the Sahibs, and a dozen local porters departed Joshimath trekking towards the Rishi Ganga. Two days on the trail saw the expedition through to the village of Lata, the last point of civilization before they began the climb to Durashi. Having intimate knowledge of the route of course meant that they were able to make good time through the gorge. Even then, the heavy rains during the previous month had generated considerable erosion; some of the hillsides they crossed showed evidence of landslides. Given the difficulties of the first transit through the upper gorge, this time it was uneventful.

By the evening of September 8, the expedition had set up its basecamp inside the sanctuary near the junction of Dakshni Rishi and the Dakshni Nanda Devi glaciers ('Dakshni' means 'offering' or

'gift' in Sanskrit). Recall that Shipton and Tilman's objectives were not only to explore/survey the southern sector of the sanctuary, but to investigate any potential climbing routes on the south side of Nanda Devi, and to find a route out of the sanctuary besides the obvious one through the Rishi Ganga.

Their first bit of exploration was due east up the Dakshni Nanda Devi Glacier towards the ridge that formed the southeastern barrier of the sanctuary. Their immediate objective was to reconnoiter the col which Longstaff had climbed from the east many years before (Longstaff called it 'Lwanl Col' but that probably derived from a nearby mountain known as 'Lawan,' ~19,020 ft). By afternoon, as the clouds started to thicken, Shipton, Tilman, and Angtharkay gazed up at the barrier; it appeared to be a 2,000 ft ascent up a steep gully. If the gully contained snow, it would be a reasonable affair for loaded climbers; however, if it was icy, it would not be safe or practical, as they would have to cut steps. In addition, it was readily apparent that from time to time the gully was swept by falling rocks. Ascending the rocks on either side of the gully was totally out of the question as well. Henceforth they decided to think this one over before committing to the ascent.

That evening back at basecamp, after some discussion, they ultimately decided that it was in their best interest to move up the Dakshni Rishi Glacier and investigate another possible exit point, leaving Longstaff's Col for another time. This col or low spot on the southern barrier had been mentioned by Hugh Ruttledge, who two years before had with his Swiss guide attempted to reach it from the south. They had failed in that attempt as the ice climbing had been difficult. Ruttledge referred to it as the 'Sunderhunga Col'; obviously the name is derived from the Sundardhunga Glacier located on the south. The col is located between the peaks of Devtoli (22,270 ft) and Maiktoli (22,319 ft).

The next morning, the three Sherpas, Tilman, and Shipton started up the glacier towards the col. By afternoon, they had covered a fair distance, but the weather once again deteriorated, so they set up camp well short of their goal. That evening, the clouds parted and they were able to view the col at the head of the glacier. The route looked very favorable; equally important, just to the right the summit of Maiktoli caught their attention as well. Another council of war was initiated that evening; both Shipton and Tilman were in favor of a revision to their reconnaissance plan. Instead of climbing to the col and down part of the way on the south side, they would throw caution to the wind and spend the rest of the time exploring the sanctuary and then put all their stock in being able to downclimb the southern barrier from the col. First on their revised list of objectives was an attempt on Maikotli.

The following morning, under clear skies, the fivesome headed up the glacier, which was slow-going as it was heavily crevassed. In the afternoon, Tilman—who had not been feeling well—decided he would descend with Pasang. Shipton, Angtharkay, and Kusang continued upwards; they camped at 19,500 ft that night. The next day, they completed the first ascent of Maiktoli (Shipton referred to it as 'East Trisul'). It was windy and cold but only a few low clouds marred the view. The summit party made a quick descent back to their lower glacier camp, where Tilman and Pasang plied them with copious amounts of tea. The party was off the next morning towards basecamp; shortly thereafter, Shipton and Tilman made their way back up the Dakshni Nanda Devi Glacier.

Their intent was to reconnoiter the southern spur of Nanda Devi; from across the valley, it looked as if it might provide a route to the summit. Ultimately, they reached ~21,000 ft on the spur without any trouble; the route above was steep but appeared climbable for the right party. They also spent these days surveying as the weather was generally clear.

The days they spent within the sanctuary passed all too quickly; it was now late September and food was running low, so the expedition set its collective sight on exiting the sanctuary. They made good progress up the Dakshni Rishi Glacier, reaching the Sundardhunga Col (~21,420 ft, sometimes called 'Ruttledge Col') in two days. The col itself was a broad plateau, so they could not see what the climbing involved below in any detail because they were still on a convex part of the slope. The terrain and potential routes would only become clear as they started to downclimb. At one juncture, they descended to the top of a 6,000-ft-high limestone cliff but did not know it until they gazed down its face. By now, they were committed to the route, so there was nothing they could do but continue to downclimb and pioneer the route as they went.

The line of descent they ultimately selected was on the Sundardhunga Glacier. In Ruttledge's account of his adventure, he had mentioned that there were three rock arêtes protruding from this glacier, but from what Shipton and Tilman could see of these features, they judged the rock to be too unstable as a feasible route. "Soon we found ourselves on ice more torn and complicated and more frighteningly steep even than that which we had tackled six weeks before on the southern side of out Satopanth Pass," Shipton was to write regarding the Sundardhunga Glacier.

They slept that night amidst a maze of crevasses and seracs. They had been able to descend 3,000 ft of glacier that day but had an equal amount to surmount the next day prior to leaving the ice for solid ground. With respect to the next day, he wrote, "… was one of heavy toil, over packed with thrills.

Hour after hour we puzzled and hacked our way down; sometimes lower our loads and ourselves on the rope down an ice-cliff, at others chipping laboriously across the steep face of a tower or along a knife-edged crest, always in constant dread of finding ourselves completely cut off."

The weather continued to be near perfect as Angtharkay did much of the route finding that day. By afternoon, they had cleared the ice and were setting up camp in some stone huts occasionally occupied by shepherds. Shipton terminated his narrative at this point, but hinted at the fact that it was a struggle to get down from the Sundardhunga Valley; additionally, they had to deal with yet another harrowing river crossing. In conclusion of this latest adventure, Shipton penned, "[Our] return to civilization was hard, but, in the sanctuary of the Blessed Goddess we had found the lasting peace which is the reward of those who seek to know high mountain places." Shipton did not mention what he was hinting at when he used the word 'hard' in the sentence above. For anyone who has spent quality time in the mountains, or in nature in general, it can be difficult to want to return to the rat-race of modern urban 'civilization'—especially for those persons whose main purpose in life is one of getting back to nature.

This ended one of the most grueling summer programs of exploration and climbing in the Karakoram-Himalaya to date. They had not trekked long distances or climbed numerous virgin summits, but what they had been able to accomplish was a feat for the ages. What separated Shipton and Tilman from most others was their ability—or more accurately, willingness—to sacrifice personal comforts for the pure joy of exploring some distant mountainous region, especially if no one had been there before. Additionally, they were willing to push further into the unknown than others, which was tempting fate at times, but with skill and luck on their side, they always managed to pull through. Crossing the Satopanath Pass, and then a month and a half later crossing over the Sundardhunga Col without knowing what to expect on the descent in Himalayan terrain, is bold.

Chapter 24

The Triumvirate, Part 2

A Himalayan Holiday

In June of 1937, Frank Smythe embarked on a four-month excursion of the central Garhwal in order to climb some of its unnamed and unclimbed peaks. In addition, and this was an equally important objective, he tasked himself to collect as many species of Himalayan wildflowers as possible. These two objectives may seem at odds, not only in terms of environment, but also that here was one of world's great mountaineers puttering about some meadow collecting flowers and their seeds! So, who was Frank Smythe?

Smythe was born and raised in Kent, England. His mother took him to the Alps when he was eight and they stayed for almost a year. His love for the mountains never waned after that. However, as a child he was diagnosed with some type of heart ailment; doctors recommended to his mother that he should take it easy—that is, to not exert himself too much. That certainly did not happen. While in his early twenties, he moved to Austria (and Switzerland for a time) to pursue his engineering studies. While there, he became immersed in climbing and the new sport of ski mountaineering. He spent the next seven summers climbing and skiing across the Alps.

After earning his university degree, he enlisted in the Royal Air Force, but was discharged shortly thereafter for medical reasons. Besides being a first-class climber, he became an avid photographer and of course a prolific writer. For a number of years, he was a mountain correspondent for *The Times*. When not in the mountains, he was writing about his adventures and giving public lectures.

His introduction to the Himalaya occurred in 1930, when he was invited to join the international Kangchenjunga expedition led by Professor Günter Dyhrenfurth, a German geologist. The expedition attempted the Northwest Ridge but never got remarkably high on the mountain; you can read about it in Smythe's lucid account *The Kangchenjunga Adventure* (1930). They did, however, explore several satellite peaks of Kangchenjunga and made the first ascent of Jongsong Peak located to the northwest.

In 1931, Smythe organized and led his own expedition; this was the successful first ascent of Kamet (*Kamet Conquered*, 1932). He invited Eric Shipton, which turned out to be Shipton's introduction to the Himalaya. After descending from Kamet, the expedition wandered south and then west across the central Garhwal, eventually spending several weeks exploring the greater Arwa Valley to the northwest

of Badrinath. En route, the party crossed the Bhyundar Pass (~16,688 ft) and on the west side traversed a large valley filled with wildflowers; after spending many weeks on snow, ice, and rock, this oasis of green was a godsend. Smythe and Holdsworth, the latter being a botanist, dubbed it "The Valley of Flowers." The name has stuck and today it is a UNESCO World Heritage Site and a National Park. Smythe also participated in the 1933, 1936, and 1938 attempts on Mt. Everest, all from the north. He reached 28,000 ft on the 1933 attempt, which you can read about in his narrative *Camp Six* (1937).

By 1937, he had already participated in four large expeditions, so Smythe was ready for a scaled-back mountain adventure. He arranged to hire four Sherpas from Darjeeling. Wangdi Nurbu, who went by the name of 'Ondi,' had been with Smythe on Kangchenjunga and on the 1933 and 1936 Everest attempts. The other three were Pasang, Nurbu, and Tewang—the latter having climbed high on Everest during the 1924 expedition. This was the core of the team; however, a Captain Peter Oliver, who was serving with the Indian Army, would join in late July. Smythe wrote in his account entitled *The Valley of Flowers* (1938), "One reason for this small party was that, after four large and elaborately organized Himalayan expeditions, I welcomed the opportunity of taking a Himalayan holiday, a very different affair from an attempt to climb one of the major peaks of the world and involving an entirely different scale of values both human and material."

Smythe, his four Sherpas, eleven local porters, and a half-ton of gear departed the village of Garur—the end of the road—on June 5. Their first port of call was Joshimath. The trek was hot and flies were bothersome at a number of camping sites; however, the party was rewarded with some sweeping vistas of the mountains to the north. From Joshimath, it is a short trek northward on the pilgrim path which leads to Badrinath. Roughly halfway between the two villages, a side valley to the east provides access to the Bhyundar Valley, in which the Valley of Flowers is itself located. The lower half of the valley consists of meadows interspersed with various shrubs and clusters of trees. The upper half of the valley contains the Bhyundar Glacier with col at its head.

Basecamp was established on a shelf within the Valley of Flowers, some 500 ft above the river. Snow in the form of avalanche debris was scattered around the valley here and there but even at that early date, mid-June, a few species of wildflowers were in bloom. There were also small patches of birch forest scattered around the valley; these in part provided ample wood for Smythe's nightly campfires. There was also plenty of rhododendron and juniper to burn.

Smythe and Co. spent the first several weeks collecting flowers, seeds as well as bulbs. Once flowers were picked, he pressed them in a flower press he had brought out from England. Smythe was not a professional botanist, but he had learned a fair amount while wandering through the Alps and Himalaya. All this collecting had a purpose—the specimens were going to Kew Gardens, one of the largest botanical gardens in the world. The various species would be cataloged, flowers grown from the seeds, and then in some cases, the next generation of seeds would be made available to European gardeners.

During this period, Smythe and Wangdi—the latter being the most proficient climber of the Sherpas—ascended an unnamed peak (~19,500 ft) located on the south side of the valley on a two-day climb. When the monsoon rains began in late June, basecamp was moved to a location lower in the valley that offered a little more protection from the elements. Several days later, an attempt on Rataban (20,229 ft), located 1 ½ miles to the southeast of Bhyundar Col, was made. The climbers were repelled by a mid-summer blizzard. After this, the party also trekked up to the Khanta Col (14,750 ft) located between the Valley of Flowers and the Alaknanda Valley to the west. This is the route the Kamet expedition had used six years earlier. Several days passed before Smythe and his trusty climbing partner, Wangdi, made the ascent of another unnamed peak (~19,000 ft) located just to the east of Nilgiri Parbat. The last several hundred feet involved some rock climbing on clean granite.

What attracted Smythe to this area was that he could spend a day or two attempting a nearby peak when the weather allowed, and then descend to camp and soak up the lushness of the surroundings. On rainy days, he and his crew would concentrate on the flowers. It was an ideal situation. In time, however, some of the more challenging peaks started to ‘exert their influence’ over the mountaineer within. Smythe admitted that at the start of this expedition, he was not in good physical shape, but after the approach trek and several weeks roaming the valley, his climbing form was returning.

During his stay in the valley, Smythe had been eyeing Nilgiri Parbat, the icy sentinel which forms the northeastern half of the Bhyundar Col. This snow- and ice-covered pyramid seemed to beckon a first ascent. By mid-July, it was time for action. The Sherpas and Smythe departed basecamp with provisions for five days and headed towards Bhyundar Col. From what Smythe had seen of Nilgiri Parbat (21,239 ft) from the south, west, and east (in 1931, when they traversed the col after leaving Kamet), it looked exceedingly difficult. However, he had never gazed on it from the north, so he put all his stock on there being a suitable route on the north side. Access to the northern slopes of the mountain involved an

ascent of the ridge to the north of basecamp, then a descent into the unnamed valley below, and then another gradual ascent to the head of this same valley towards the east.

It took two days to reach the north side of the mountain, with Nurbu, Pasang, and Wangdi in support, with Tewang remaining at basecamp. On the trek, they came across some large set of tracks in the snow which Smythe measured to be 13 in. long and 6 in. wide. They were fresh, with five toes clearly discernable. The Sherpas were frightened by the sight of the tracks; they attributed them to a 'Kang Admi' or 'Snowman.' The group followed the tracks for some distance; it was clear that whatever creature had made them was at home on rock as well as on a glacier.

Smythe took a number of photos of the tracks and after having returned to basecamp several days later, had the film taken by a mail courier and developed in India. The images were then forwarded to three English zoologists for their opinions. Later that summer, they sent a telegram to Smythe, who was still in the Garhwal. The zoologists concurred that the tracks were made by a Himalayan brown bear, found throughout the region. The large tracks in the snow were made when the animal put its hind legs directly behind the track made by the front paws, giving the impression of one large foot. The Sherpas were insistent that there was an Abominable Snowman roaming the valleys and hence they were constantly on their guard against an ambush; no zoologists in faraway England were going to alter what they knew to be fact.

On seeing the northern slopes of Nilgiri Parbat for the first time, Smythe thought it all looked complicated. They were at the base of the Northwest Ridge, which did not look climbable at all. The North Face, especially the upper 2,500 ft, was broken by numerous icefalls—it appeared downright hostile. The only hope was the Northeast Ridge; however, it would require some effort just to access its lower ramparts. The party did not have the time or supplies to establish an intermediary camp, so any attempt would involve a long climb over the course of a single day. After some head-scratching, Smythe decided to set up camp on the lower buttress of the Northwest Ridge.

The next morning, Wangdi, Pasang, and Smythe departed camp at 6 a.m. on their attempt. They had to descend some distance in order to reach the North Face and then traverse across the lower section in order to reach the Northeast Ridge. Fortunately, the weather was generally good, although a dense fog blanketed the slopes from time to time. The condition of the snow was ideal for rapid movement, allowing the threesome to make good time. Their route on the ridge weaved around and up and over various obstacles as needed. Smythe noted that the ridge seemed to go on forever, but

eventually "… the ridge stretched almost level for perhaps 200 yards, then suddenly narrowed into a blade, which swept upwards in a shining curve to end in a perfect point." They delicately climbed along the knife ridge to the summit; there was only room on the summit for one climber at a time. By this time of the day, the fog had dissipated and the view from the top, as Smythe wrote, was "a marvelous panorama."

The descent involved cautious downclimbing; there were no unabandoned glissades. The threesome arrived back at camp after thirteen hours of toil. Recalling this climb when he wrote his narrative, Smythe said, "We had climbed nearly 7,000 feet up a peak which remains unique in my recollection for its beauty and interest, indeed the finest snow and ice peak I have ever climbed. Much that is worthwhile in life had been packed into the space of thirteen hours, but from all that I remember the summit stands pre-eminent and I can picture it as though it was yesterday, simple, beautiful and serene in the sunlight, the perfect summit of the mountaineer's dreams."

Two days after returning to basecamp from the Nilgiri Parbat climb, Peter Oliver arrived with two additional Sherpas in tow. Oliver, who was on leave from the Indian Army, had climbed in the Garhwal several years earlier and had been on the 1936 Everest expedition. The two Brits had a council of war that evening and decided that Mana Peak would be their primary objective. Smythe had had a good look at the north side of Mana Peak (23,857 ft, sometimes 'Peak' is dropped) while on the Kamet expedition; he ruled out this line as being far too complicated and requiring too many intermediary camps. He also recalled views of the mountain from the distant east and distant west, but they were also not encouraging. However, the southern face had not been examined and it was hoped that it would yield to this small expedition. The approach would be made via the Banke Glacier system, a large body of ice with numerous tributaries, located north of Nilgiri Parbat and south of Mana Peak. Fortunately, a letter to Smythe from a surveyor working for the Survey of India who had been in the area recently suggested that Mana may also be approached from the east via a 6-mile-long plateau of ice (unnamed) that was positioned on the south side of the high ridge that separates it from the East Kamet Glacier. (This ridge extends east-southeast from Mana Peak.)

Hence a plan had been hatched. Since they would have to traverse Byhundar Col to get over to the Banke Valley, Smythe suggested that they attempt Rataban, as they would essentially be passing over its flank anyway. This would be Oliver's acclimatization climb. Three weeks' worth of supplies and associated climbing gear was manhandled by the six Sherpas (Oliver had hired two of his own—Tendrup and Bao) and the two climbers to the pass. After spending a miserable night in a cramped tent, the

climbers headed up towards the North Ridge of Rataban. The weather continued to be fickle—not surprising as it was the middle of the monsoon. Their route alternated between rock and snow; it was a difficult climb, especially since Oliver had just trekked up from near sea level. By afternoon, their progress was down to a crawl and Oliver was feeling very tired. At 19,500 ft, they decided to turn around. (The first ascent was two years later by a Swiss expedition, as was discussed in Chapter 22. Their route was from the north.)

The following morning, the expedition proceeded down the glacier (unnamed) that resides at the eastern end of the Bhyundar Pass. They made their way into the entrance of the Banke Valley, where they set up their basecamp. This camp was located on a rock shelf near several caves, just off the lower section of the Banke Glacier (~14,000 ft). The next move was to climb up to the plateau (See Google Earth for a good view of the plateau). Smythe scouted out a route adjacent to an icefall which the expedition used the following day.

Over the next five days, the party established four camps on the plateau; the route took them in a northwesterly direction towards Mana Peak. Smythe and Oliver climbed the ridge separating the plateau from the East Kamet Glacier on two occasions, reaching a little over 20,000 ft. The weather was generally cloudy with precipitation falling quite frequently, but from time to time there were breaks in the clouds, affording at least a limited view. The terrain intervening between the base of Mana Peak and their furthest position (Camp 4) looked imposing. Two ridges radiated southward from the primary ridge to the north that formed the boundary of the ice plateau. These ridges were of course smothered in snow and ice; it would be a long route from their basecamp in the Banke Valley to the base of the mountain. Another factor was that snow was falling on most days; they had to be cautious about becoming overextended. However, all was not lost, there was a prominent mountain (Deoban, 22,489 ft) to their immediate north that would provide a satisfactory objective on its own, but might also shed further illumination on whether a high route to Mana was possible.

Smythe and Oliver, without any of the Sherpas, climbed the South Ridge of Deoban. The crux was a section of steep-but-wet ice that required considerable step cutting. When they reached the summit that afternoon, they were unfortunately enveloped in clouds—so much for a view (this was a first ascent. This peak was not climbed again for another forty-three years). The next morning, the clouds had parted, so the climbers ascended the ridge a short distance above their camp. This time, they had a nearly unlimited view of their surroundings; it was obvious that there was no feasible high route (traverse) over to Mana from their current position. Their only option was to descend from the plateau

and try their luck via the Banke Glacier. It took two days to clear the camps off the plateau and return to basecamp at the mouth of the valley.

After two days of rest at basecamp, the expedition began the ascent of the Banke Glacier, following the north lateral moraine. With everyone carrying loads, it took the team two and a half days to reach Zaskar Pass (18,992 ft, Gupt Khal), which separates the Banke Valley from the Alaknanda Valley to the west. It is only about 9 miles from the pass to the pilgrim path north of Mana village, with an elevation differential of about 5,800 ft. From the upper Banke Glacier, the climbers had a good view of the highest section of the South Ridge of Mana Peak; their overall impression was that it looked like it would provide a good route to the summit. There was a short section below the summit that looked like it might be a challenge; however, the real difficulty was gaining access to the lower part of the ridge. The base of the peak was 'protected' by icefalls, one extending some 3,000 ft in elevation. And then there were numerous hanging glaciers; the quantity of debris lying below indicated that they were calving with some frequency. The only lower route they held any hope for was the ridge which extended northward from Zaskar Pass.

A camp was established on the glacier just to the east of the pass by the Sherpas; meanwhile, Smythe and Oliver followed the ridge northward from the pass. It was another difficult climb as the ridge narrowed in places and there was plenty of ice that required step cutting. Their labors were rewarded that afternoon as they crested a point (what they call 'Peak 21,500 ft') located on the edge of a sizeable plateau of ice. The weather was postcard perfect, so they had an unobstructed view of their objective. The South Ridge viewed from this new vantage point looked very steep; the bottleneck they had seen from below now looked even more serious; in addition, it would not be easy to gain access to the mid-section of the ridge from across the plateau. As they looked to their left, however, they could now see the Northwest Ridge for the first time. It looked gentle in comparison with the South Ridge.

They returned to their camp (just below the pass) late that afternoon with renewed hope. The plan was to descend to Badrinath the next day, buy supplies, and then return to and climb the peak. That night, Smythe lay awake mulling over the situation; the weather had been perfect for the past several days, but of course it would not last much longer (they were in a monsoon break). Should they make the attempt now, with limited food and fuel, or head to Badrinath?

The next morning, under a clear sky, Smythe—who had made up his mind during the middle of the night—was a little hesitant to broach the subject with Oliver, but did so anyway. As it turned out,

Oliver was keen to make a summit bid *post haste*; they would just have to eke out the supplies. The modified plan was to establish a camp as far up the ridge as they could put one, that is the ridge they had climbed the previous afternoon, and then make their summit bid the next day. With the help of the Sherpas, a light camp was established on the ridge itself; due to a difficult climb made even harder by the weight of the loads, the camp was however well short of the ice plateau.

At 5 a.m. the next morning, the two climbers were off on their summit bid. An hour and a half later, they were on top of their Peak 21,500 ft. A descent of 300 ft took them to the plateau; as they crossed the plateau and drew closer to the Northwest Ridge, it became evident that the ridge was significantly steeper than it had appeared during the reconnaissance. Once they set foot on the ridge, they then discovered that a thin layer of sugar snow was lying on top of the ice—the route was going to take a lot longer than they had anticipated. Reaching the summit in one day was now very much in doubt. It did not take them long to decide to forgo this route; they returned to the plateau to discuss their options.

The obvious alternative was the South Ridge. Recall that they had disregarded it on the reconnaissance because the rock steps just below the summit looked formidable from their vantage point; in addition, the approach from the plateau to the South Ridge was via a spur, in and of itself not an easy climb. The discussion was brief; despite its shortcomings, they decided to redirect their efforts towards the South Ridge.

They made good progress across the plateau, which involved a 300–400-ft descent from which they could access the base of the spur. The climbing involved some rock sections and a steep snow gully; the latter led to the crest of the spur. Just before the spur merged with the South Ridge, it narrowed to the extreme. There was a lot of step cutting to be done in the hard snow and ice. Once they gained the South Ridge, there was a nearly horizontal section which alternated between the proverbial knife-edge and one that widened but was festooned with small rock towers; it took a full hour to navigate this relatively short distance. Above, they encountered steep terrain that alternated from snow/ice to slabs of rock; all of this was interspersed with an occasional rock tower.

Around noon, they stopped for a break. Oliver admitted that he was about done; he had not acclimatized to this elevation, which was on the order of 23,000 ft. Smythe would proceed alone; Oliver remained at the rocks where they had stopped. The weather remained ideal as Smythe worked his way up the convoluted ridge; at times he had to venture out on either side of the very steep slope in order to

avoid one of the rock towers. At one point, he came across a most-bizarre feature. A boulder about the size of a small house had in some miraculous way become wedged on the crest of the ridge. (It is possible that it had eroded in place and just looked as if it had been a separate piece at one time.) The rock was overhanging on the front, and the sides were sheer; there was no way to bypass it on either side. Fortunately, Smythe eyed a gap at the bottom of the boulder where it met the ridge, and he crawled in. The 'cave' narrowed towards the back as it was choked with ice. There was an exit in the back; however, it was not aligned with the crest of the ridge, but rather on the western face. The face was a sheer drop but he eyed a narrow ledge just below the exit. In a gymnastic feat, he was able to crawl out of the cave headfirst, find some solid handholds, and then push with his feet in order to get his lower torso out as well. By the time he reached the safety of the ridge, he was exhausted.

The next section of the ridge consisted of sugary snow lying on top of rock; this was followed by a 50-ft-high rock tower. He was able to circumvent it by taking to the steep snow slope on the Southwest Face. From there, it was a short climb to the summit, which he reached at 1.30 p.m. Mana Peak had its first ascent; the next ascent would not be until 1966. Since the weather remained clear and with no wind, his time on the summit was memorable. When he wrote about the time he had spent on top, two things became etched into his memory: the view of Tibet, and the absolute silence—no sound whatsoever.

His descent of the ridge back to where Oliver was waiting took about an hour; it was less difficult than he had anticipated. The two climbers then retraced their route from that morning, which required re-cutting steps in the sections of ice that the sun had melted. They were back at their high camp by 6.15 p.m., where the Sherpas were waiting. After some tea, the camp was dismantled and the expedition descended to their camp near Zaskar Pass.

It only took the party a long day of trekking to reach Badrinath, home to a Hindu temple dedicated to Vishnu. Anyone who has ever visited Badrinath—unless it is cloudy the whole time—cannot but be impressed with Nilkantha (21,640 ft, 'blue throated'), which towers over 10,000 ft above the town. It made an impression on Smythe and Oliver. After two days of rest, on August 15 the expedition set out on a 4-mile trek south via the pilgrim path. From there, they veered to the west and then northwest up the Khiraun Valley (Khiroi). This led them to the south side of Nilkantha. Basecamp was established in a picture-perfect alp consisting of several hundreds of acres of grass and a few stone shepherd huts (~15,000 ft). The only spoiler was the weather—rain and fog.

The next morning, under clear skies, the climbers made their first foray on the mountain. They made good progress up the South Ridge; much of it consisted of solid rock (granite) but their route twisted and turned through many formations. They came to a rock step which at first looked insurmountable, but Smythe gave it a turn and was able to overcome the difficulties. Farther up the ridge, they came to another step, this one about 200 ft high. Both climbers thought it would be climbable, but since it was late afternoon, and they had just been on a reconnaissance, it was time to turn around (~19,000 ft). On the descent, they found a better route—one that they had dismissed that morning as being unreasonable. By the time they were lower down the ridge, clouds had developed, as had a layer of fog, making it difficult for them to find their camp.

It started to rain shortly after they had arrived in camp; it rained continuously, much of it torrential, for the next two and a half days. When it finally started to clear, it was evident Nilkantha had received a good dose of snow. Nevertheless, over the next several days—with the assistance of the Sherpas—two camps were established on the ridge and then the two climbers were left on their own. The short period of favorable weather was drawing to a close. Another consideration was that with fresh snow on the route, it was going to be a much more challenging prospect than it had been before. They deviated from the route they had taken on the reconnaissance, ending up on some smooth rock slabs on the Southeast Ridge. They pushed onwards, eventually reaching ~19,500 ft before they hit an impasse. The weather was rapidly deteriorating, and soon they were in a hailstorm. Both climbers now knew that Nilkantha was tougher than they had anticipated. They retreated to their camp and then the next day evacuated the mountain. (After a handful of attempts in the subsequent decades, the mountain was finally climbed by an Indian Army expedition in 1974 from the north via the Satopanath Glacier.)

The expedition walked into Joshimath on August 28. Oliver still had some leave from the Indian Army, so despite the recent trouble with the weather, the two climbers decided to attempt Dunagiri (23,182 ft), which at that time had not been climbed. Several years earlier, Oliver had tried to get on the Southwest Ridge, but was repulsed by the difficult terrain at the base of the ridge.

Three days of rest, relaxation, and purchasing of supplies was enough to see the expedition on its way up the Dhauli Valley. They reached Lata Kharak and then Dibrugheta in the rain. Once in the Rishi Ganga Gorge, they were able to follow the track of the recent (1936) Nanda Devi expedition. They made good time to the entrance of the Rhamani Valley, establishing basecamp on September 6. They were still two glaciers and two ridges away from gaining access to the Southwest Ridge. Monsoon rain had been

turning to snow—in fact, quite a bit of snow. They pressed on and eventually made it to the base of the ridge.

Over the next several days, they climbed the Southwest Ridge until it met the steep South Face. To this point, they had mostly encountered firm snow, and little in the way of ice. Early on the morning of September 13, under a cloudless sky but in very cold air temperatures, Smythe and Oliver set out from their highest camp in a summit attempt. They had their doubts whether they would reach the summit; from below they could see that the summit ridge was long and steep. As they climbed, the weather started to deteriorate. Here is how Smythe described the summit ridge: "The ridge rises and falls in a series of scallop-like edges. Of the precipices on either hand, that to the south-east is a mere 4,000 ft, but that to the west is appalling in its steepness and magnitude." The drop was on the order of 8,000–10,000 ft into the Dhauli Valley.

Sections of the snow ridge were undercut, or corniced, while others narrowed to the extreme. As they worked their way across, the winds increased as well. Their strategy was to stay below the crest of the ridge, especially where it was corniced; however, here the snow was soft, often knee-deep. At one point, with Oliver in front, a chunk of cornice broke off, taking him down a short distance until he was stopped by a ledge. Smythe, on the other end of the rope, did not have time to react, just watching the proceedings. Oliver was unhurt and they resumed the traverse for a short time. They climbed about one-third of the length of the ridge when they collectively decided that they had had enough. From where they stopped, there did not appear to be any serious obstacles to the summit (as noted in an earlier chapter, it was climbed by the Swiss on their 1939 expedition).

The descent was unpleasant, very cold with heavy snowfall. Once clear of the mountain, snow turned to heavy rain until they reached the grazing meadows of Lata Kharak. It was mid-September and as it turned out, this was the end of the monsoon rains. The expedition made its way back to Joshimath; Oliver's leave was just about expired, so he had to head back to his Army post. Smythe and his Sherpas returned to the Valley of Flowers for an additional three and a half weeks of botanizing. By late September, Smythe had begun the long journey back to England.

Hence concluded a 'Himalayan holiday' as Smythe came to call this adventure. Besides all the flowers, seeds, and bulbs that went to Kew Gardens, Smythe was able to explore an area few had penetrated before. He also made the first ascent of Nilgiri Parbat and Mana Peak—and nearly made the first ascent of Dunagiri. Equally important to Smythe was the leisure time he was able to spend—

especially sitting round a campfire at night with the smell of juniper or birch wafting through the air. Smythe had a philosophical nature, so time alone to reflect on his surroundings and the meaning of it all was crucial for his well-being.

Chapter 25

The Triumvirate, Part 3

Central Karakoram: 1937

While Smythe was wandering about in the Garhwal, Shipton and Tilman were on an adventure of their own. Shipton formulated this itinerary during the conclusion of the 1936 Mt. Everest expedition; the original concept came from John Morris, another member of that expedition. One of Morris's dream projects was to trek from Hunza in the northern Karakoram to Leh via the Shaksgam River Basin. This would entail exiting Hunza by way of the Shimshal Pass, trekking up the middle Shaksgam River for some distance, into the Aghil Range, and then re-entering India via the Karakoram Pass. This concept sparked something within Shipton; in the end, he greatly modified it, but the boldness of the concept motivated him to start to research what possibilities the area held.

Shipton to this point had not set foot in the Karakoram, and neither had Tilman; but the idea of roaming over vast glaciers and associated icefields—places where few people if anyone else had gone—was of course enticing. Shipton read accounts of previous Karakoram explorers and he spent many hours studying all the relevant maps. In time, he noticed that there was a large area on the Survey of India maps covering the northern sector of the Central Karakoram, where the contours ended abruptly. It was not because the topography suddenly ended, but rather because it had not been surveyed. This blank space on the map had a label—it read "unexplored." Needless to say, to Shipton this was the equivalent to a 17th-century duke removing his white gloves and throwing them into the face of his opponent. Challenge accepted.

The operational objectives which emerged over the next several months of planning were the following: first, the expedition would cross the main axis of the Karakoram Range in the vicinity of the lower Baltoro Glacier (the exact pass was yet to be determined), trek down the Sarpo Laggo Glacier to the northeast, and spend some unspecified weeks exploring the lower Zug Shaksgam River within the Aghil Range. They would also traverse the Aghil Pass and survey the surrounding area to the north. Second, the team would explore the glaciers lying immediately to the north and northwest of K2. Third, Shipton wanted to traverse and survey the vast glaciated region lying north of the Sarpo Laggo Glacier,

south of Shimshal Pass and bounded to the west by the Hispar-Biafo glaciers. This was the largest 'blank' region on the existing maps.

Some of the aforementioned regions had been traversed by Europeans a few times over the previous 100 years, some not at all. All the area, however, needed to be surveyed. This expedition differed from Shipton's previous ones in a couple of respects; the emphasis was on exploring and surveying—mountaineering of course would occur, but it was not the primary goal. In addition, these routes would take them to a totally uninhabited region, one of ice, snow, rock, and raging rivers. There were no villages or towns which they could occasionally visit and purchase food; virtually all their food would have to be carried from the south side of the range, that is the Braldu Valley. Shipton was planning on the expedition lasting about 100 days—so, the quantity of food that needed to be transported was mountainous. In short, this expedition was going to have to be self-supporting, relying on their own wits and survival skills.

Given the stated objectives, Shipton now had to find a team crazy enough to execute it. Tilman was of course a given. Although Shipton had dabbled with surveying on previous expeditions, which entailed hauling a plane-table over hill and dale in order to take bearings of various topographic points, on this expedition he needed a professional to oversee the work. In this capacity, he was able to entice the services of Michael Spender, a surveyor who had worked in Greenland and the Great Barrier Reef, and was a member of the 1935 Mt. Everest reconnaissance. Shipton was also able to procure John Auden, a geologist who worked for the Geological Survey of India. Auden had climbed extensively in Europe and had of course been in various parts of the Himalaya. Four years prior to this expedition, he had visited the Biafo Glacier, so he was familiar with the southern approach via Skardu and Askole.

Shipton quickly realized that the nature of the work would require a tremendous amount of load carrying, equally as much as was involved in climbing Everest or any other major peak. Not only to get the initial supplies over the crest of the range to the north side, but even then, they would be trekking long distances from any basecamp and food cache. The best means to do this work was to hire a small contingent of Sherpas. Despite the fact that Sherpas lived on the opposite side of the Himalaya, there was no equivalent source of manpower of the caliber of the Sherpas residing in the villages scattered throughout the Karakoram. Baltis had been hired to carry loads by most previous expeditions, but there was no cadre of climbing porters at that time. Hence seven Sherpas were imported for the task. Their sirdar was Angtharkay, the veteran of so many Himalayan expeditions, who was more of an equal

partner in this adventure than a hired hand. The remaining Sherpas were Sen Tensing, Lobsang, Ila, Lhakpa Tensing, Angtensing, and Nukku.

Once the expedition was underway, Shipton was able to hire four local Balti men (from Skardu) who turned out to be reliable and game for the program. They ended up joining for the duration. In total, there were fifteen expedition members—an inconceivably large number for a Shipton expedition—but there was no way of getting around the fact that it would take this number in order for the four Europeans to survive three and a half months in parts unknown. Despite its size, in typical Shiptonian fashion, the expedition had a tight budget, £855 (about £16,500 in today's market) to cover all costs, including transport from England and back. The tally after the expedition showed that they were actually a few pounds under budget.

Like any expedition, the selection of gear was critical to its success; however, on this expedition less was better. As Shipton succinctly stated, "It is far better to improvise than to take too much." One man's necessity might be another man's luxury. When it came to the selection of utensils, for example, there were various opinions. Shipton wrote, "Tilman was strongly opposed to our taking plates, insisting that one could eat everything out of a mug. I maintained that if we happened to be eating curry and rice and drinking tea at the same time, it would be nicer to have them served in separate receptacles." Needless to say, when the expedition departed Srinagar on May 5, the porters and ponies were only carrying the bare essentials.

The expedition followed the well-traveled route over the Zoji La to the Indus River, and then north-northwest to Skardu. The trek to this point can be characterized as hot and dusty. From Skardu, they trekked to the village of Askole, feasting on apricots when available. It was while crossing the raging Shigar River that they received their introduction to local transportation; local boatmen ferried all the expedition across on rafts constructed from the inflated bladders of sheep. (The rafts are called 'zaqs.') It was a memorable experience for those who had never had the pleasure of this type of transport.

Just prior to entering Askole, the European contingent—which had been lagging behind the Sherpas for most of the day—came upon a major disturbance. One of the local porters had damaged a load he was carrying (inadvertently, as it seems); however, one of the Sherpas hit him in response. This created a disturbance not only amongst the porters but with the local villagers as well. When Shipton and Co. arrived, there was a lot of shouting and pushing, but they were able to prevent any further

escalation. However, the incident did not boost the reputation of the expedition with the local populace. It was this same populace that the expedition was now dependent on hiring as porters and from which they had to purchase basic food stuffs. The Sherpas were on the receiving end of a good verbal thrashing from Shipton.

Over the next several days, despite the previous fracas, the expedition was able to negotiate the services and salaries of 100 local men that would manhandle the supplies over the pass to the north side of the range. At first, the locals were reluctant to join the expedition, but over time the money offered was just too tempting. (By this point, money was starting to gain acceptance in the remote villages—however, it still had to be in the form of heavy coins.) As far as Shipton was concerned, getting the supplies over the crest of the range was the most difficult part of the entire expedition. Without a mountain of food, the planned operations simply would not occur. In addition to what had been transported from Skardu, Shipton purchased 2 tons of flour in Askole.

One immediate problem was that the locals no longer used the passes over the Central Karakoram with any frequency, so most porters were not familiar with them and hence there was the potential that they might hesitate going that high when the time came. No one else in the party had of course been over them, including Auden. Shipton was relying on old information, and that information suggested that these passes were not easy to navigate. Hence he worried, as he should have, that the porters might balk or even mutiny when the going got difficult.

Despite the organizational headaches, the expedition pushed out of Askole on May 26. They were headed up-valley to the lower Baltoro Glacier and then north over one of two possible passes. Shipton was still trying to decide which pass to use for the traverse—the choices were the East Muztagh (this is the original one used by Younghusband) or the Sarpo Laggo. As noted in earlier chapters, there was another option, the West Muztagh Pass. Shipton did not—for unknown reasons—consider using it at this time. The last known account of anyone crossing the East Muztagh Pass was by Professor Desio in 1929. His report was that the south side of the pass, that is the one approached from the Baltoro side, was very difficult. However, the professor had also reconnoitered both approaches to the Sarpo Laggo Pass and reported that it was “practicable.” In the end, Shipton decided to put all their effort into using the Sarpo Laggo Pass. The route would take them up the length of the Trango Glacier, just south of the Trango Towers. This glacier was one of the first tributaries (closest to the terminus) to flow into the Baltoro Glacier on its north side.

"The enormous size of the glaciers compared with those on Mount Everest and in Sikkim and Garhwal, made me feel as bewildered as when I first went to the Himalaya after being used to Alpine Mountains," Shipton wrote regarding the Karakoram scenery. The volume of ice in this part of the Karakoram is about an order of magnitude that of the Himalaya. As the expedition proceeded up the South Braldu Valley and onto the Baltoro Glacier, the weather turned rainy and then snowy. The porters did not have tents; typically, they slept huddled en masse under their thin blankets. When some natural cover was at hand, such as a cave or overhanging rock, they would congregate inside. At night, they would construct a blazing fire, burning juniper bushes which they would collect at each camping ground. They would also cook their chapattis on small campfires. In general, the mood of the porters fluctuated with the weather. When it was cold and wet, they lacked motivation; when it was sunny, they made good progress and seemed eager to assist.

Since this was *terra incognita* for the Europeans, and the maps they used were often inaccurate, Shipton and Co. had to be careful not to lead the column of porters up to many dead ends. For example, as they worked their way up the ice towards the pass, there were a number of tributary glaciers that fed into the Trango Glacier; they did not know which of these glaciers actually led to the pass. In an attempt to circumvent navigational errors, two of the Europeans would scout well ahead of the main party. Spender and Shipton spent most of May 31 climbing up a side glacier in the hope that it would lead to the pass—it did not.

After a day's carry, a handful of porters would be discharged as they were no longer needed. The large cadre of porters meant that a handful of additional porters were needed to carry food and firewood for their comrades; food-carrying porters could be dismissed from time to time. The weather was good during the ascent—cold nights but sunny and relatively warm by day. However, as the expedition climbed higher, the morale of the porters declined noticeably.

By June 2, it was obvious now that the expedition had found the correct route to the pass. The snow, which had been firm lower down, was surprisingly soft and deep on the upper glacier. By this juncture, the majority of the porters had had their fill; they dumped their loads short of the pass and headed home. All the unmanned loads were put into a large pile, to be ferried across the pass over the subsequent days. That afternoon, the remainder of the expedition crossed the Sarpo Laggo Pass (18,723 ft) and dropped down onto the upper Sarpo Laggo Glacier. It had been a trying and downright ugly start to the expedition, but at least they were now on the verge of establishing their basecamp, and the actual crossing of the pass had been easy.

Over the following days, most of the Sherpas, the four Baltis, and a handful of the remaining porters ferried loads across the pass. Meanwhile, Spender started his survey work while Shipton and Angtharkay pushed the route down-glacier. On the north side of the glacier, they found a picturesque camping ground (Changtok) that contained discarded remnants left by previous travelers. There were several stone foundations and some stone circles. On the adjacent slopes were a number of whitewashed bones of large animals—possibly wild asses or ponies—in addition to the horns of mountain sheep.

It took until mid-June to get all the loads over the pass and put in a cache along the glacier. Basecamp was established on the broad floodplain of the Sarpo Laggo River, about an hour's walk southwest of a small 'oasis' known as 'Sughat Jangal.' From their camp, they could look west straight up the Crevasse Glacier (Skamri Glacier) to a plethora of unnamed and unclimbed peaks. Tempting as this was, the first order of business was to carry out the proposed exploration of the Aghil Range. Time was limited because from mid-July onwards there would be little chance that they would be able to ford the imposing Shaksgam River. As summer progressed, glacial melt increased the flow of rivers by two or three times. If the expedition crossed over now but waited too long to re-cross, they would be cut off from their supplies and would have to extricate themselves by trekking north towards Khotan in Chinese Turkestan.

Although Tilman had been afflicted on and off since the end of May by some type of fever—and with his most recent bout occurring when he had arrived at basecamp—by June 16, he had recovered enough to join the others in the commencement of their adventure up the Shaksgam Valley and into the Aghil Range. They followed the valley upriver (east-northeast), staying on the south side until they came to the second side valley that entered from the north. Their first objective was to find the Aghil Pass; they were working off Younghusband's written description and a sketch map produced by Professor Desio—the two sources did not agree. They crossed the river where it widened; nevertheless, it was still a challenging process.

They fortuitously had selected the correct valley, and by early afternoon they were atop Aghil Pass (15,764 ft) looking down (north) towards the upper Surukwat River. They camped on the edges of a small lake near the pass and held a council of war. What emerged from that meeting of the minds was as follows: Spender and his team would stay in the vicinity of Aghil Pass and continue the survey. K2 was visible from there; it was the primary benchmark for the map that he was producing. Auden and his team would move north towards the Yarkand River and then into the western sector of the Aghil Range.

After two weeks, they would attempt to find a new route back to the Shaksgam River via one of the parallel valleys to the west. Auden, of course, would be conducting a geological survey as they trekked. Meanwhile, Shipton and Tilman would head east to explore the Zug Shaksgam River and its intervening mountains.

Two of the Sherpas and two Baltis joined Shipton and Tilman as they trekked northward following the Surukwat River and then proceeded up the first large valley to the east. Over the next three days, they worked their way up to the crest of the ridge which separated the valley of the Zug Shaksgam from the upper Surukwat. They were slowed down by Tilman, who had another brief bout with his fever; while he stayed in camp, Shipton and several porters made a day-long reconnaissance up a side valley which he thought might lead to the Zug, but it turned out to be a false lead. Two days later, with Tilman back to health, they were able to find a route over the ridge located to the southeast. On the crest of that ridge, Shipton and Tilman spent two hours conducting their own survey. It took the party until the following afternoon to reach the banks of the Zug Shaksgam River to the east, where they established their own temporary basecamp.

Angtharkay and one of the Baltis were sent downriver in order to scout the route through a narrow gorge that was visible from camp. Meanwhile, Shipton and Tilman spent the next two days exploring the terrain upriver; at several locations they found unoccupied stone huts. The following night, both parties returned to their camp on the Zug. Angtharkay reported that it was not possible to navigate through the gorge. Their options were to either retrace their inbound route or attempt the route to the north, which would entail circumventing the gorge. Shipton and Tilman selected the second option; they generally always liked to cover new ground.

The trek down the lower Zug Shaksgam River was classic Shipton-Tilman; they had to climb up very steep walls consisting of conglomerate (various sizes of rock held together by mud-silt)—some of these ascents were on the order of 4,000 ft. At times, they chopped steps in the solid mud with their ice axes. Frequently, after an arduous ascent, they would have to immediately descend back towards the bottom of the valley. The party had to cross the river numerous times; on one crossing, Tilman went under the water and lost his ice axe. Shortly thereafter, Angtharkay attempted to cross; he lost his footing and was dragged downriver, bouncing off large boulders as he went. Shipton watched from the bank thinking that Angtharkay was certainly going to drown. Fortunately, he did not drown; eventually he was hauled out of the river bruised and shaken up but otherwise still able to travel.

The trek continued; ultimately, they reached the Surukwat River, and from there on the route became considerably easier. They made good time trekking back to the Aghil Pass, where Spender had been surveying with abandon. While Shipton's party had been exploring the Zug, Auden's party had followed the Surukwat River to where it joins the Yarkand River, then had retraced their steps before exploring the area to the west and northwest of the Aghil Pass. They eventually made their way back to the Shaksgam River via the next valley to the west of the pass. They had been able to collect some interesting fossils scattered around the area.

By July 8, the entire expedition had reassembled at basecamp on the Sarpo Laggo floodplain—phase one had been completed. The next objective was to explore the area north and west of K2. To facilitate this, the expedition would form smaller parties. Spender and his survey team would move back up to the lower reaches of the Sarpo Laggo Glacier with the mission of surveying the area immediately between the glacier and the Baltoro Glacier to the east. Meanwhile, Shipton, Auden, Tilman, and one of the Sherpas would explore the area to the north and northwest of K2. The final group was composed of Sherpas and Baltis; they were tasked with ferrying loads from the stockpile that had been left at a camp halfway up the Sarpo Laggo, down to basecamp.

The K2 exploration party spent a week venturing up the K2 Glacier before ascending the East K2 Glacier. Although the weather was fickle—on-again, off-again snow, with short periods of clear skies interspersed—they did get some close-up and very impressive views of K2 and its surrounding peaks. Shipton and Tilman were able to climb a mountain to the east of the K2 Glacier, now known as 'Tilman Peak' (20,685 ft). When the weather permitted, they were able to set up the plane-table and take the bearings of the surrounding summits.

At the end of the week, Tilman and Lhakpa Tensing ventured up to the top of the East K2 Glacier, over a col, and then trekked down Staircase Glacier (now called 'North Skyang Glacier.' The prominent peak to the northeast of K2 used to be called 'Staircase Peak' (24,786 ft) but was officially renamed 'Skyang Kangri.' Hence any nearby glaciers that were named 'Staircase' were changed as well). The weather was primarily cloudy with considerable snowfall; unfortunately, they did not get the opportunity to enjoy the tremendous views, and subsequently were able to make only limited survey notes. Meanwhile, Shipton had returned to basecamp.

By mid-July, with most of the expedition occupying basecamp—the exception being Auden and several Baltis, who were up the Shaksgam conducting additional geological work—it was now time to

organize and commence with phase three of the expedition, the exploration of the massive glacier system located to their west. Access to this icy world was via the 26-mile-long Crevasse Glacier (now called the 'Skamri Glacier'). There are only a few peaks in this region that surpass 23,000 ft, but at the time few if any of them were known. There was, however, a seemingly endless number of granite spires and ice-fluted peaks that had not been viewed by humans, let alone climbed. Essentially, the region between the Crevasse Glacier and the Biafo-Hispar glaciers consists of a number of elevated plateaus (icefields) from which numerous glaciers flow down through the valleys on the perimeter.

One of the primary objectives of phase three was to explore Snow Lake. Recall that earlier explorers such as Conway and the Workmans had been on the western edge of this vast area of snow, which the former had likened to a lake. For decades, it had been speculated that Snow Lake was an ice cap from which many glaciers emanate. Technically, it is not an ice cap, as there are dozens of individual glacier basins; however, the net result is the same.

The first order of business for the expedition was to haul the still-large mountain of supplies that loomed over basecamp up the glacier. They had some 700 lbs of gear and about 1,500 lbs of food; Shipton estimated that it would take each man three round trips to move the supplies from one camp to the next. Roughly speaking, it would take close to a month to establish a camp at the head of the Crevasse Glacier. It would not all be drudgery; some exploration and surveying would be conducted as well. One major concern was that they only had 5 gallons of paraffin remaining; paraffin was the fuel which they burned in their stoves. Even then, the metal containers were leaking. They would really need to find firewood (juniper bushes) along the unglaciated slopes in order to cook their food and melt snow for drinking water. When the paraffin ran out and local fuel was no longer accessible, the expedition would of course be over.

The work of manhandling the loads began on July 18. It was not easy but had its own rewards. About halfway up the glacier, they ran across many sizeable supraglacial streams, some of them too large to cross on foot. Finding alternate routes was time-consuming but it could be interesting. At one point, they constructed a short rope bridge in order to span one of these formidable streams. There were some close calls with these water features but by the end of July, they had all of their supplies reassembled in their fourth glacier camp (Dump IV), about 15 miles up the ice. This camp was placed just off the ice, on a gravel bar where the North Skamri Glacier flows into the Skamri Glacier.

Shipton was pleased with the progress to date, so decided that it was time for another council of war. Since the division of the expedition's manpower into sub-groups had worked well to date, it was decided to split into three independent groups for the final push. The first party consisted of Spender, Shipton, and five of the Sherpas; this was the primary survey group and they would concentrate their efforts to the northwest, specifically the area on and around the Braldu Glacier. Eventually, they wanted to reach Shimshal Pass, from which they would exit the Karakoram via Hunza. The second party consisted of Tilman and two Sherpas; they would trek to the west, hopefully traversing Snow Lake, and then explore—if possible—the region to the southwest of the Hispar Pass. That left Auden and the four Baltis. They would also trek to the west but then attempt to find a route down the Panmah Glacier; if that was not possible, they would continue with Tilman's party to the Hispar Pass and then descend via the Biafo Glacier. Auden had to get back to his job with the Geological Survey, so time was critical. Each party would travel home, wherever that might be, as independent units as well.

However, before the expedition split up for the final time, a number of days were spent in local reconnaissance; it was not a given that they would be able to find exit points from the upper basin. Their camp was located directly below (to the north) a formation which they named 'The Fangs'—an impressive, ice-covered ridge which jutes 5,000 ft above the glacier. One interesting point that Shipton made note of at this juncture in his narrative is the fact that when a party is in an unmapped area, it is difficult to derive meaningful names for the many peaks and glaciers it encounters. Glacier 37 and Peak Goodfellow do not do justice to the region, although this is how professional surveyors operated. As a temporary solution, Shipton's party applied various contrived names, knowing that they were just for their own usage: 'Father Christmas Group' was used for the cluster of mountains to the north of Dump IV. Most of these names are no longer used, but some of those coined by Shipton and previous explorers have stuck, at least as unofficial names, for example 'The Ogre' and 'The Fangs.'

The upper Skamri Basin, as it turned out, contains four cols that provide access to the west and northwest. The next day, despite the ongoing snowstorm, the expedition explored several of these cols (unnamed today, and I have numbered from north-south). Shipton and Angtharkay found an easy route up Col #2 (elevation unknown). After traversing to the western side, during a break in the clouds they got a brief but constructive look at their surroundings; they could confirm that they were in the upper Braldu Basin. They trekked westwards for several hours before returning to the col. During the intervening time, the clouds had dissipated. "The view was magnificent, but very perplexing," wrote Shipton, regarding the view from Col #2. What he meant by 'perplexing' is that the topography was a lot

more complex than what he had envisioned. Recall that this area was just a white space on the newest maps, hence they had no idea at all what to expect.

On the return trek back to their camp, after an exceedingly long day of exploration, the sun had already set when Shipton fell into a crevasse. Fortunately, he was roped up with Angtharkay, who held Shipton's initial fall. The latter attempted to chimney up the sides of the narrow crevasse but could not make meaningful progress. Eventually, he ended up in the bottom of the crevasse in a deep pool of water. Why the rope did not prevent this second fall is unknown; Angtharkay must have been preoccupied while Shipton was attempting to extricate himself. Shipton managed, in the dark, to find a protruding ice formation and hoist himself out of the water. He then was able to shout instructions up to Angtharkay to drop the end of a second rope with a loop tied on the end. Eventually, Shipton was hauled to the surface—extremely cold but uninjured. Shortly thereafter, they met Tilman, Auden, and Ila on the way up the glacier in search of the two overdue climbers.

The next day, while Shipton rested in camp with a sore back, Tilman's party went to reconnoiter the southernmost col they could see from camp. The weather had improved and when they reached Col #4 (unnamed today, ~17,970 ft) they were rewarded with significant views to the west. In the foreground was the upper Nobande Sobande Glacier, and to the immediate north was a ridge which separated the aforementioned glacier from the upper Braldu Glacier. In the far west, they could see an assemblage of rock pinnacles and ice-clad peaks. The reconnaissance of the past several days had been highly successful, as several routes to the promised lands beyond Crevasse Glacier were now known to exist.

Although exit plans had been made for the three parties, the expedition was not quite ready to divide and conquer for the final time. An exploration party consisting of Tilman, Auden, and Ila gathered three days' worth of food from the stores at Dump IV and headed up the Crown Glacier. This was another substantial tributary glacier which merged with Crevasse Glacier 2 miles to the east of Dump IV.

While Shipton's and Tilman's parties had been out on reconnaissance at the head of the Crevasse Glacier, Spender and his crew had spent two days trekking up what Shipton had started to call the 'Father Christmas Glacier.' On modern maps, this body of ice is known as the 'North Skamri Glacier.' Under cloudless skies, Spender had spent three days in an orgy of surveying.

After resting his sore back, Shipton and Angtharkay ventured up the North Skamri Glacier to check on Spender. As it turned out, Spender had found Wesm Pass, which connected the North Skamir

Glacier to the Wesm-i-Yaz Glacier lying to the northwest. After conversing with Spender regarding his work, Shipton decided that when it was time for his party to leave Crevasse Glacier, they would use Wesm Pass instead of Col #2 because of the ease of travel up the North Skamri Glacier. Spender's and Shipton's parties returned to Dump IV just as it started to rain and snow. Tilman's soggy party trekked into camp the following afternoon after venturing part of the way up the 12-mile-long Crown Glacier.

On August 10, despite the 1 ½–2 ft of fresh snow that covered the region, Auden's and Tilman's parties departed Dump IV intent on exploring the terrain to the west. This was by no means the end of the expedition, but it was the final time that it would be a united force. Auden was headed back to work, and Tilman and Shipton would not see each other until they were reunited back in England.

Auden's Party (Auden summarized his outbound trek with a short chapter in *Blank on the Map*)

Auden and his four Baltis worked their way out of the upper Crevasse Glacier via Col #4. For the first several days, they traveled with Tilman's party. Since the weather was clear, Auden spent several days with the theodolite surveying amidst a sea of peaks. They were now due north of the middle section of the Nobande Sobande Glacier. The glaciers in this area were very broken up; it did not help that there was only one ice axe to be shared amongst the five members of this party. Adding insult to injury, their Primus stove was out of commission, which Auden eventually tossed aside; so, there was no hot food or drinks until they could find combustibles for a campfire. They spent the good part of a day attempting to get onto the Nobande Sobande, but it was so broken up that they finally extricated themselves and climbed back up a rock ridge in order to secure an aerial perspective. The next day, they worked their way down the north side of the glacier; at times in the ablation valley and during some other spells they were forced to ascend to the cliff above. They had to navigate another difficult spot near the confluence of the Drenmang Glacier; the Baltis found a passage through a convoluted section of ice near the northern margin of the Nobande Sobande. Good fortune then returned; the trek across the Drenmang Glacier turned out to be easy and as it was getting dark, they were able to find a grassy spot just off the ice that also had plenty of firewood.

The next day, they continued their descent on the hillsides to the east of the ice. They were now descending alongside the Panmah Glacier, as the Nobande Sobande is the name for the upper section. The party was forced to traverse several tributary glaciers (Chiring, Feriole) which, however, did not cause any undue hardship. Just below the terminus of the Panmah Glacier, they crossed the mouth of a

side valley. Not five minutes after they had crossed, a large mud and debris flow came hurtling out of the mouth of this same valley. Massive boulders were caught up in the slurry of water and mud; Auden estimated one rock to be on the order of 120 tons. The Baltis were prompt in thanking Allah for their safety. The rest of the trek to Kashmir was uneventful, and Auden was back in Srinagar by September 3.

Tilman and Co. (Tilman summarized his outbound trek with several chapters in *Blank on the Map*)

While Auden and party were attempting to extricate themselves from the Central Karakoram, Tilman and the two Sherpas—Ila and Sen Tensing (aka 'The Foreign Sportsman.' This was the nickname Tilman gave him during the 1936 Mt Everest expedition)—were making their way farther to the west. The threesome was loaded down with food estimated to last for twenty-two days. This combined with their remaining gear was more than they could carry as single loads; hence at least for the first part of their trek they were forced to ferry loads between camps. After parting ways with Auden's group, Tilman and Co. ventured up a small unnamed tributary glacier lying to the north of the Nobande Sobande Glacier. It was very crevassed, as Tilman found out firsthand. He was out in the lead and managed to fall into two crevasses in quick succession. The Sherpas held both falls but it was still nerve-wracking. They crossed a north-south-oriented pass Tilman dubbed 'Faith Pass,' known today as 'Tilman Pass' (18,234 ft). This gave them access to a small glacier which ultimately flowed into the upper Braldu Glacier.

After a day spent reconnoitering to the west, followed by a day retrieving loads from Tilman Pass, it was time to push camp westwards yet again. On the reconnaissance, they had found a low pass due west of their camp which they now ascended with heavy packs. They had eaten enough of their food supply that they could now manage with single—albeit heavy—loads. From the pass, which Tilman described as a "wide saddle" and christened 'Charity Pass' (est. 17,350 ft, unnamed on modern maps), they had an impressive view of the peaks to the west.

They camped at the base of Charity Pass that night and the next day continued their trek by crossing the Lukpe La (18,283 ft). On the western side of the pass was the Sim Gang Glacier. It was there that the party came across a set of interesting tracks in the snow. Tilman said they were three or four days old, circular in shape, and about 8 in. across but about a foot deep. The most curious part was that each track was in a perfectly straight line about 18 in. apart. The tracks led from a small supraglacial lake over a mile to a rock outcrop. Tilman thought it was some type of bear while the two Sherpas were convinced that it was the smaller version of the Abominable Snowman, the man-eating Yeti. If it was a

bear, what was it doing up there in a glacial wasteland where there was nothing to eat?! Tilman told his Sherpas that if it was indeed a Yeti, it must be *extremely hungry*, as no one had been up there in about thirty years—a point that did not sit well with his men.

Continuing westwards, they reached the eastern boundary of Snow Lake. Tilman was disappointed with the size of Snow Lake; he estimated it to be 6 miles long and 3 wide. There is a discrepancy between Tilman's description and the accompanying maps. Both the large- and small-scale maps that accompany the text *Blank on the Map* indicate that Tilman's route took the party across the Sim Gang Glacier. Snow Lake on these maps is the glaciated area to the north, which is consistent with modern maps. I believe the confusion is from the fact that Conway and the Workmans referred to the large area east of the Hispar Pass as 'Snow Lake.' In the time span between the Workmans' publications and the publication of Spender's map, the southern part had been named 'Sin Gang Glacier,' only leaving the northern sector as Snow Lake. The editors of *Blank on the Map* failed to note this discrepancy, that is between Tilman's narrative and Spender's map.

That afternoon, they reached the upper Biafo Glacier; they were now some 3 miles below (southeast) Hispar Pass. Tilman had studied photographs taken by the Workmans of the barrier that formed the southwestern wall of the Biafo Glacier; the imagery indicated there was "a deep gash cut in this great wall." Closer inspection by Tilman showed that it was not a practical route to the west. His next objective, nevertheless, was to cross this barrier and explore the area to the north of the Susbun Glacier system and east of the Chogolungma Glacier. A contributing factor to Tilman's attraction to this area was to settle the long-standing debate between Conway and the Workmans on the existence of a body of ice the latter named 'Cornice Glacier.' Recall from an earlier chapter that the Workmans had viewed it from the ridge lying to the north of the North Susbun Glacier. They claimed that this glacier was entirely enclosed by mountains; Conway argued that that was not possible because over geologic time the ice would grow thick enough to overtop the barrier or erode its own outlet.

Tilman set up camp at the base of the barrier and the next day the threesome attempted to climb a peak lying on the barrier itself. (He did not name it but it was probably Solu Peak, 19,727 ft.) After navigating through several small icefalls, they managed to gain the ridge. The ridge narrowed to a classic knife-edge. Tilman had his doubts about proceeding; it was icy and his two Sherpas, as he puts it, "climbed with too much abandon to be desirable companions on such a place." Tilman therefore decided they had gone high enough after trudging over to another ridge a short distance away (they were on or near Solu La). The view to the west revealed "a tumbled sea of peaks that would have defied

the topographical sense of a homing pigeon," Tilman wrote. They looked down on a glacier which abutted the west side of the ridge on which they were standing. Due to an intervening ridge, they could not see the lower reaches of this glacier. They did, however, notice that far below in the foreground was a grassy knoll on which a smattering of small trees was growing, a true oasis in the midst of so much ice and snow. There was, however, no practical descent route from where they were standing. Tilman did spy another gap on the barrier located just to their south; this, however, would require another reconnaissance. The descent back to their camp through the icefalls was memorable; to the climbers, the seracs appeared to be on the brink of toppling over at any moment.

The next day, the trio made a short descent down the Biafo Glacier en route to the col on the barrier that Tilman had seen the day before. This second col (Sokha La, est. 16,700 ft) was only an 800-ft ascent from the Biafo Glacier, primarily on avalanche debris that had broken off from a hanging glacier located to the immediate south. Once on the col, they viewed another glacier to the west which also snaked around a ridge out of sight. The descent to the west, however, would be considerably more difficult than the ascent they had just made; it was about a 2,000-ft drop to the glacier below, on what appeared at first to be a smooth rock face. If they selected this particular route, they would be forced to downclimb the rock directly from the pass.

They returned to their camp on the Biafo Glacier that evening. The recent days of blue skies and warm sunshine were now history—snow was falling the next morning when they awoke. They packed up their camp and headed for Sokha La just as the fog began to reduce visibility. They had no problems ascending the col and as it turned out, the descent was quite easy as well, despite their opinion of it the day before. The body of ice they were now on Tilman referred to as the 'Cornice Glacier,' but today it is called the 'Sokha Glacier.' The Workmans had referred to it by this name when they viewed it from the ridge above. Tilman and Co. camped that afternoon in a small meadow complete with grass and wildflowers, the first foliage they had seen in many weeks.

After a relatively short trek the following morning, they came to the confluence of another small body of ice, the Solu Glacier, which flowed into the Sokha Glacier from the east. Tilman ventured up it a short distance in order to confirm that this was indeed the same body of ice they had seen from the Solu La—it was. He thought he saw the peak that they had come close to summiting four days earlier. The party made good speed down the lower Sokha Glacier; by afternoon, they had left the glacier behind and ventured upon a shepherd's settlement (Dabads) containing a few stone huts and several occupants. The climbers understood from the shepherds that they were in the Kushuchun Lungma,

today this valley is referred to as the 'Berelter Nala,' located about 6 miles north of the village of Bisil. Tilman and Co.'s traverse of the Sokha Glacier laid to rest the Workmans' mountain-bound Cornice Glacier. Why they suspected that it had no outlet is a mystery in and of itself. They were generally better explorers than to accept something like this on very limited evidence. Especially when they made a big splash in the literature regarding its supposed unique characteristics.

In Bisil, the threesome were able to procure a supply of apples, potatoes, and some much sought-after eggs. Tilman stripped down in front of a gathering crowd and bathed in a bubbling hot spring. After weeks of glacier travel, it was good to be in Bisil. It did not take Tilman long to fall in love—not with a Bisil beauty but with a pyramid-shaped summit located to the southeast known as 'Ganchen' (21,197 ft). This was the same peak the Workmans had explored in 1903.

Tilman wasted no time in coming to grips with his mountain; it ensnared him like a siren calling to a wayward mariner of old. The Sherpas and the now-obsessed Brit left the north-south-oriented path near the village of Zil (~8,400 ft); that afternoon, they made an ascent to a small village located near a grazing alp. The next day, Ila accompanied Tilman on a reconnoiter while Tensing remained in camp to guard what little they possessed. The climbing party managed to gain the ridge just south of Ganchen, some 4,000 ft above their camp. Tilman came up with the idea that they would move camp over this ridge and attempt Ganchen from the east, as it looked far too difficult from the south or west.

The next day, weighed down by heavy loads, the trio knowingly ascended a different gully than the one they had on the reconnaissance; Tilman was under the false impression that it would save time—it did not. Hours later, they had to backtrack and climb the original gully; this led to the base of the ridge where they set up camp. The following morning, the climb to the col—which would provide access to the east—was difficult, significantly more difficult than Tilman had bargained on. Upward progress was so slow that they had to camp yet again, this time on the glacier about 1,000 ft below the col. Early the next morning, Tilman decided that they should climb up to the col for a preliminary look before committing with heavy loads. He cut steps up the ice and several hours later they were able to look down the steep east side to a glacier far below (Hoh Lungma). There was no practical way down. At least the view was awe-inspiring. They could see K2 to the east and Nanga Parbat to the west. Their only option was to descend and try again somewhere else. Tilman's short narrative does not explain why, but by now Tilman had given up on an attempt on his beloved Ganchen, and just wanted to traverse the ridge and gain access to the Hoh Lungma Basin to the east.

On the descent, Tilman wanted to avoid at all costs the icefall that they had been forced to deal with the previous day; the only alternative was to try their luck on some rocks to the immediate south. This alternative route did work, but only after they came to grips with a sketchy bit of loose rock in a steep gully. After a number of days spent pursuing dead ends, Tilman then made the executive decision that they would return to the main valley and work their way northward via the local path, with an eye to inspecting each side valley as a possible route over to the Hoh Lungma.

Over the next several days, they carried out this revised plan; they returned to the Basha River Valley, worked their way northward, and about a mile south of the village of Bisil, headed east up a side valley. This led to a glacier that flowed down from the north side of Hikmul (20,499 ft). The first col they inspected was an easy climb from the west, but Tilman did not like the look of the descent on the eastern side. They backtracked and took the next col farther north. One has to wonder what the Sherpas were thinking of Tilman's erratic course; in any case, they were getting paid, but his course of action probably elicited some colorful remarks exchanged between the two Sherpas.

The next day, they made the basin-to-basin traverse on the northern-most col, which did not give them any substantial difficulties; they were now treading on an unnamed (even to this day) tributary of the South Sosbun Glacier. Tilman and the accompanying maps in the text referred to it as the 'Hoh Lungma'; in fact, all of the glaciers in this area are labeled as the 'Hoh Lungma.' The map Tilman was using (Survey of India), as he described it, was widely inaccurate in that part of the world. Modern maps show several glaciers emanating from the eastern slopes of the Hikmul-Ganchen Ridge, which are not labeled on the maps accompanying *Blank on the Map*. The maps in the book were composed from Spender's survey, and hence not available until post-expedition. However, since Spender never spent any time in this region, a considerable amount of detail is therefore lacking on this part of the final map.

The Sherpas and Tilman made rapid progress as they trekked down the glacier. The next day, they made their way up to the top of the ridge separating the North Sosbun Glacier from the Sokha Glacier. They could now look a short distance across and see the Sokha La they had crossed ten days previously. The threesome had essentially now completed the circuit, although made more difficult by a number of Tilman's false leads, but nevertheless satisfying his quest for adventure. The next two days were spent trekking down the Sosbun Glacier and then following the Hoh Lungma River to the nearest village. Tilman and his two Sherpa partners were back in Srinagar by late September.

The Survey Team

After Auden's and Tilman's parties had departed Dump IV, the remaining expedition personnel spent the next three days working on various projects. The Sherpas were tasked with carrying the remaining loads that had been left at a dump lower down the glacier to their current camp. Meanwhile, Spender was off surveying on the upper Skamri Glacier. Shipton climbed several adjacent mountains and helped Spender. The weather had been ideal during this period, prompting Shipton to note that he was pleased with the progress of the survey.

Once the entire survey team had reassembled at Dump IV, they spent the next two days hauling loads up to Wesm Pass (est. 18,860 ft) above the North Skarmi Glacier. Despite the depth of the snow, they made good time. From the pass, they rolled their loads down the north side; however, on more horizontal parts of the glacier they combined the loads in order to facilitate a single carry. Shipton estimated that the Sherpas were carrying loads in the order of 130 lbs. They camped that night on the edge of an icefall on the Wesm-i-Yaz Glacier (Shipton referred to it as the 'Wesm-i-Dur Glacier').

The next day, they were able to bypass the icefall by descending a rock gully on the north side. A side valley radiating to the north attracted their attention, so they spent the next two days trekking up it. A small glacier was nestled in the upper part of the valley; however, their goal was the ridge above. They were able to climb to the ridge crest, which was narrow and corniced; nevertheless, they established a survey station at ~20,000 ft. The station was so precarious that while Spender and Shipton were conducting the survey, they were belayed from below by Nukku, one of the Sherpas.

The next four days were spent moving down the remaining length of the Wesm-i-Yaz Glacier and then descending a narrow valley, complete with steep cliff faces composed of conglomerate, reminiscent of the Shaksgam River Valley. By August 24, they had reached the Braldu River and its broad gravel bars. Although their boots were worn out, they still had sixteen days of food on hand, hence Shipton decided that they should survey as much as the North Braldu Basin as possible. Their exit strategy was to leave the district by taking the Shimshal Pass to Hunza; the pass was only 10 air miles to the northwest from their current position on the North Braldu outwash plain. First, however, was the exploration of the 22-mile-long Braldu Glacier.

At that time, as it is today, the upper glacial basin was composed of eight tributary glaciers; each of these contain two to four smaller bodies of ice themselves. Like most of the Central Karakoram, the

topography is complex to say the least. The party made excellent time trekking up the glacier; it only took two days to reach the threshold of the upper basin. The weather was ideal for the following three days—hence it was almost nonstop surveying. Shipton and two Sherpas climbed a ~19,000 ft peak (unnamed) on the extreme western side of the basin overlooking the upper Virjerab Glacier. A day later, they spotted a large cairn (taller than a man) on a rock outcrop; it had been built by the Sherpas who were accompanying Tilman just days before. It also contained a note written by Tilman describing his party's movements since leaving Dump IV. Spender had to work at a frenetic pace over the course of these days, but by the time they started to descend, he was able to complete the survey to his satisfaction.

The party then trekked back down the length of the glacier and made their way to a shepherd's encampment known as 'Chikar' on the outwash plain. Crossing the Braldu River, which they were forced to do if they wished to exit the region via the Shimshal Pass, gave them considerable trouble. Shipton attempted it on his own in a spot where the river was braided into six channels. He managed to struggle across the first three channels before turning around and rejoining his party. Even then, he was nearly swept off his feet. Lower down the valley where the river once again was wide and braided, the entire party made its attempt. This time, they used two ropes; the first man across was belayed from upstream, so he could put all his weight on the rope. Once he made it across, he tied the second rope to act as a handline. All the other men carried the loads across, with the exception of the last man. The initial belay was repeated for the last man, but now of course the belayers were on the other side of the river.

They camped that night in a grassy meadow complete with flowers and a grove of willows. The next day, they were visited by four local men ('Shimshalis,' as the locals are known), who were friendly but wanted to know the names of each member of Shipton's party and where they were headed. Shipton, using sign language, also attempted to communicate that the expedition wished to purchase some food. Sometime later, the youngest member of the Shimshal party rode off, in what Shipton hoped would be a food run. A couple of days later, the young man rode back into camp with two sheep and some butter. In the meantime, two additional Shimshalis had also decided to join in the festivities.

The following day, another sizeable contingent of Shimshalis arrived on horseback; it turned out to be the Lambadar, or headman from the village of Shimshal. He was pleased to understand (through sign language and some Hindi) that Shipton and Spender were Englishmen. He offered the services of several of his retainers to the expedition, which Shipton accepted. The next day, Shipton—led by several

of the local men—was able to venture down to the confluence of the Braldu River with the Shaksgam; he noted that it was as stark as the upper reaches of the Shaksgam which they had visited some two months prior.

It was now the end of the first week of September, and it was time for the survey party to begin the long trek towards Kashmir. Shipton had already committed himself to the 1938 Mt. Everest expedition, and hence he needed to return to England to help with pre-climb logistics and organization. If the snows came early to the passes in Baltistan and Kashmir, he could potentially be snowed in for the winter. When the expedition reached Shimshal Pass, Shipton sat there for some time, "caught up in the magic of the view." He reminisced over the events of the previous five months; the expedition had been a huge success. Spender's map added a massive amount of details to an otherwise blank space on the Survey of India maps. New areas had been explored, old theories had been laid to rest, and even a few mountains had been climbed.

Recall that this was Shipton's first visit to the Karakoram; to say that he had been impressed by the terrain would be a great understatement. Had he not already committed himself to Everest in 1938, he would have returned to the Karakoram that year, or possibly even wintered over. The last sentence in *Blank on the Map* reads "for the supreme value of the expedition centered in an experience of real freedom rounded off with the peace and content of an arduous job of work completed and enjoyed."

Follow-Up: 1939 Karakoram Expedition

The Mt. Everest expedition of 1938 was a serious disappointment to the members of the expedition, including Shipton (see chapter below for Mt. Everest discussion). The expedition was another bloated affair; there was nothing new about the route, and the weather was terrible as usual. When the summer of 1939 rolled around, Shipton was back in the Karakoram on his own expedition. At this juncture, the name Shipton was well known and respected around Britain, so funding was not difficult.

The 1939 affair was designed to be his most ambitious project to date. In a chapter included in his narrative, *Upon That Mountain*, Shipton outlined his plan for the Karakoram. In broad terms, he wanted to return to the Aghil Range and wrap up the survey in the districts that they had missed two years before. In addition, he wanted to thoroughly explore the region lying north of Shimshal Pass and south of the Oprang River. And finally, the expedition would re-examine some of the topographic uncertainties that existed in the greater Hispar-Biafo-Panmah basins. This last objective was suggested

by the Surveyor-General of India, who Shipton had happened to meet in Calcutta the previous year. In the end, some of the funding for the 1939 expedition came from the office of the Survey of India.

Based on these three objectives, Shipton formulated a bold program; the team would survey the Hispar-Biafo-Panmah basins during the summer of 1939. During the winter of 1939–40, the expedition would explore the area north of Shimshal and parts of the Aghil Range. Although it would be cold, it would be relatively dry, as these regions are in the rain shadow of the taller mountains to the west (most of the weather in this region moves from west to east). The advantage of a winter program is that the local rivers freeze solid, making for much easier access. In the spring of 1940, they would purchase a small herd of yaks and travel up the Shaksgam River, making their way to Leh. From Leh, Shipton hoped to travel into Tibet and explore the source of the Indus River.

With such an ambitious program, finding the best personnel would not be easy. Shipton of course invited Tilman—as most of their adventures throughout the 1930s had been in each other's company. Surprisingly, Tilman declined the offer to join the expedition. There are several reasons why he declined; in Shipton's account, he noted that Tilman declined because the proposed itinerary was just too long—he wanted to go on a shorter excursion. In addition, with the possibility of war in Europe on everyone's mind in late 1938, Tilman wanted to make himself available, since he was a member of the Army Reserve.

However, Peter Steele, who wrote a biography of Shipton, speculated that another reason Tilman did not join the 1939 expedition was that he felt that during the 1937 expedition there was too much emphasis on surveying and exploration at the expense of serious mountaineering. Tilman knew that the 1939 expedition would be a similar situation. As it turned out, the late 1930s marked the watershed years in the careers of Shipton and Tilman. Their last large joint expedition was the 1938 Everest expedition; they did not team up again until 1947, when the duo attempted Mustagh Ata. The main reason for the split was a divergence of their respective interests: Shipton of course at this juncture of his mountaineering career was leaning towards surveying and exploring new regions. In contrast, Tilman wanted to concentrate on mountaineering. By the mid-1950s, they had gone their separate ways: interestingly, Tilman's main passion was now shifting towards sailing, with some mountaineering mixed in; while Shipton focused on the exploration of Patagonia.

Michael Spender was another member from the 1937 expedition who could not make it in 1939 due to prior commitments. His replacement was Peter Mott, who turned out to be a competent

surveyor as well. Two additional new members were a botanist named Scott Russel and a doctor Eadric Fountaine. Two surveyors from the Survey of India were assigned to the expedition as well: Fazal Ellahi and Inayat Khan. The core of the expedition personnel was rounded off with nine Sherpas, with Angtharkay acting as sirdar.

The team departed Srinagar in June, traveling north towards Gilgit. This route took them just to the east of Nanga Parbat. From Gilgit, the track let up to Hunza past Rakaposhi, and by early July the expedition was at the base of the Hispar Glacier. As usual for a Shipton run program, the personnel split up into multiple sub-parties in order to cover as much ground as possible. The emphasis was on the survey, so considerable effort went into sustaining this party on and around Snow Lake. Shipton and Fountaine trekked down the Biafo Glacier and then made their way east-northeast and surveyed the Panmah Glacier. While camped on the upper Hispar Glacier, in early September a bombshell hit—despite their remote location, the expedition received word that World War II had commenced a few days earlier. After some discussion, Shipton decided to terminate the expedition so that each member could offer their services to the British Government.

After returning to England early that winter, Shipton was recruited to take over the Consulate-General position in Kashgar, Chinese Turkestan. He never did get to winter over in the Aghil or make the trek up the Shaksgam River, although living near the Kun Lun and Tien Shan ranges did have its advantages.

Chapter 26

Everest: Beginnings and the 1921 Reconnaissance

The first attempt on reaching the summit of Mt. Everest was made by the 1922 British expedition under the leadership of Brigadier-General Charles Granville Bruce; however, this expedition was the culmination of a number of earlier proposals and forays. Who made the first serious proposal to climb Mt. Everest is lost in history, but we do know the idea was mentioned by General Bruce as far back as 1893, when he was on the Conway Karakoram Expedition. Years later, 1906 to be exact, the idea went even further. Bruce and Longstaff proposed an attempt on the mountain, but when they could not obtain the blessings of the Government of India to even approach the Tibetan Government seeking permission, they gave up and decided to climb in the Garhwal region of northern India. This was the origins of Longstaff's 1907 expedition, which made the first ascent of Trisul.

According to Kenneth Mason, who as we have seen worked for the Survey of India and was one of the founding members of the Himalaya Club, he noted that in 1909 the Government of Nepal was willing and in the process of issuing a permit to the British for an attempt on Everest, but the British Government decided that they did not want to risk any embarrassment or political fallout if anything should go awry, so they withdrew their support. Obviously, that was a one-time offer, as the authorities in Katmandu did not repeat it until 1951.

The next personage on the Mt. Everest timeline is John Noel, who in 1913 was a major in the Indian Army stationed in Calcutta. He took leave and went on an exploratory journey into southern Tibet; his objective was to get as close to Mt. Everest as possible. This was the same Noel who later participated in both the 1922 and 1924 British expeditions, primarily as a photographer. In 1913, however, he was on his own and more importantly he did not have permission to enter Tibet. Lack of permission to enter Tibet or Nepal had not of course hindered earlier Himalayan explorers; they just crossed the border and took their chances with the authorities if they were apprehended.

Noel was a one-man show, with a handful of Sikkimese for support, hence his needs were modest, and more importantly—since he did not have permission to enter Tibet—a small party would be more likely to avoid contact with Tibetan authorities. He left Gangtok, Sikkim in early July of 1913 with two Bhutia porters and two mules. In northern Sikkim, he hired the services of several yak herders in order to transport a month's worth of barley flour (satu) across the border. The yaks and their two owners proceeded into Tibet via a pass he referred to as the 'Sepo La' (~16,500 ft). Meanwhile, Noel and

his two servants trekked west into the Lhonak district of Sikkim so he could enter Tibet by the less traveled Choten Nyima Pass (19,091 ft). The plan was for the two parties to rejoin west of the villages of Kampa Dzong and Tinki Dzong, and then proceed to the Tashirak region east of Everest. Noel crossed the Choten Nyima Pass without difficulty, but several days later, he received word that the true intentions of the yak caravan had been 'discovered' by the local officials. The result was that his supplies had been confiscated. Most of the Sikkim personnel he had hired decided that Noel was not paying them sufficiently for their trouble, and hence headed home.

Noel was undaunted with his predicament. He negotiated with the local authority and by some miracle was allowed to proceed to the west. However, a few days later, in the village of Mugk, his fortunes once again turned sour. The local authority (a different one) would have no part of this Englishman and his dubious itinerary. At this juncture, Noel saw the proverbial handwriting on the wall; he would not be permitted to travel any closer to Mt. Everest. Being an optimist by nature, he hatched a new scheme: he would return to Sikkim, find a few willing men, and re-enter Tibet, but this time without pack animals. Everything would have to be carried by the men. This would in theory allow them to avoid most but not all populated areas, traveling what we would today call a 'cross-country route,' avoiding main trails as much as possible.

By August 4, Noel and nine Sikkim men were crossing the Choten Nyima La into Tibet for a second time that summer. They traveled cross-country as much as the terrain would allow; however, you cannot establish a camp just anywhere in Tibet because of the lack of water and scarcity of combustibles for a fire. A fact Noel did not figure into his plans. This meant that they were often forced to camp relatively near settlements. Noel's immediate objective once he had arrived in southern Tibet was the Langbu La (~17,000 ft), a pass which he hoped would provide views of Everest and from which the party would be able to descend into the Arun Valley.

When Noel and his men reached the Langbu La, the weather was clear and the view was indeed magnificent; there was one problem—only the upper 1,000–1,500 ft of Mt. Everest was visible over the intervening ridge. However, Noel named two nearby mountains which he estimated to be in the 23,000-ft range: Taringban (22,071 ft, 'long knife,' today called 'Nyonno Ri') and Guma Raichu ('Guma's tooth', 21,620 ft). At this point, he realized that the map he had been using, and upon which he had based his hopes of reaching the Arun Valley, was totally inaccurate. The mountain range to his southwest appeared to be an impenetrable barrier (today this is referred to as the 'Ama Drime Range'). While in

Sikkim, he had heard rumors of a pass, the Chabuk La, that linked the Tambar Valley which he was in with the Arun to the west. He never did find any evidence of such a pass.

Since Noel's hopes had been dashed regarding a close approach to Everest, he led his party to the town of Tashirak. The locals were not happy with the sudden appearance of this outsider. A day later, there was a brief shooting match between some local guards and Noel's party. No one was hit by flying bullets; the guards, realizing that their guns were outdated, rode off. Exasperated, Noel decided to head back to Sikkim; by the end of August, he had crossed the Naku La (17,290 ft), leaving Tibet for the second time without a close-up view of Everest.

Not wanting to waste the "splendid September weather," he organized an excursion to the northeastern side of Kanchenjunga, the Zemu Glacier in particular. He spent some days at Green Lake on the margin of the Zemu Glacier before heading back to civilization. When he finally returned to his Army regiment, he was two months' overdue, a serious offence. He managed to evade a court martial by telling his superior officer that his calendar had been swept away in one of the river crossings and that he had hence lost all count of the days. His excuse worked; he got off with a reprimand to take two calendars next time.

So, what did this foray accomplish? In terms of exploration, not very much. The primary result was that the current maps of this part of Tibet were very inaccurate. After returning from his expedition, Noel proposed several routes through northwestern Sikkim into Tibet which he had used himself. It is interesting to note, however, that all of the early British Everest expeditions (1921, 1922, 1924, etc.) avoided his suggestions and went much farther to the east, preferring to cross into Tibet via the well-used Jelep La (14,390 ft). The northern passes provide a shorter approach to Mt. Everest, but they are steep and not as pack-animal friendly as the Jelep La. The longer eastern route was based on a well-established trade route, where upon the expeditions would be able to procure porters, pack animals, and food. In fact, the standard Everest trek from Sikkim would take about four weeks and the mountain was finally approached from due north, not from the east.

The next event in a long chain that principiated the British Everest expeditions occurred in 1919 when Sir Francis Younghusband was elected as the new president of the Royal Geographical Society. He of course had a strong desire to see a Brit stand atop the tallest mountain on the planet. In order to generate some enthusiasm for an Everest expedition, Younghusband asked John Noel to address a meeting of the RGS in the autumn of 1919, some six years after the former's excursion into southern

Tibet. As we just saw, Noel's contribution was to show that the most direct line from Sikkim to Everest was not feasible for a large expedition. More importantly, however, his presentation to the RGS did spark the enthusiasm that Younghusband had hoped for. This was manifested in the establishment of the Mt. Everest Committee (MEC) not long thereafter.

The MEC was a joint Royal Geographical Society (RGS) and Alpine Club (AC) venture. The idea behind the creation of the MEC was so that it could promote and fund British efforts on Everest. Three men from each society would form the committee. The AC had the manpower while the RGS had considerable expertise in the organization of large expeditions. Funding would be through private sources; a significant percentage of the funding for most of the expeditions came through contracts signed between the MEC and either *The Times* or *The Telegraph*, giving either one of those newspapers exclusive rights to expedition news. In those early years, Younghusband was the first Chairman of the MEC, and hence his name frequently appears in conjunction with the first three expeditions. By the late 1940s, the MEC was reorganized into what was called the 'Joint Himalaya Committee' (JHC).

Much of the success for securing permission from the Tibetans for these early expeditions has to go to Charles Bell, the British Political Officer who was stationed in the Chumbi Valley of Tibet in 1905 and later in Sikkim. Bell met and subsequentially became good friends with the XIII Dali Lama when the latter fled Tibet in 1910 and lived in Sikkim for two years. Bell was a Tibetan language scholar and was finally able to visit Lhasa in 1920 at the request of the Dali Lama. It is no coincidence that the British were given permission to attempt Everest shortly after Bell's visit to Lhasa.

1921: Reconnaissance

The MEC's choice for leader of what they were calling the Mt. Everest reconnaissance expedition 1921 was Brigadier-General Charles Granville Bruce. The now fifty-five-year-old had spent much of his life living and traveling on the subcontinent. Bruce, who was actually a full-time soldier in the 5th Gurkha Rifles, had been stationed in Abbottabad (just north of Islamabad, Pakistan) for decades. When on leave from the Army, he was a climber, guide, and explorer. He spoke Nepali and got on with the Gurkhas splendidly. He tended to favor, at least during the first half of his career, the peaks and valleys of the 'middle ranges' of Kashmir, as they were often more "beautiful and accessible" than the loftier terrain to the northeast, is what he wrote in the Preface of his 1910 book, *Twenty Years in the Himalaya*. He participated in Conway's 1892 Hispar-Biafo-Baltoro expedition. He was also a member of Longstaff's

1907 Garhwal Himalaya expedition. The MEC could not have selected a better man as leader, but there was only one problem—Bruce was not available for the 1921 reconnaissance.

With Bruce temporarily out of the picture, the MEC selected Colonel Charles Howard-Bury as leader. Howard-Bury had recently retired from the Army; he served for years in India and had spent time in the Himalaya, mainly on hunting expeditions. Although he was primarily what today we would call a 'trekker,' and not a mountaineer, he had been very interested in the Mt. Everest proposal for some years and he had a talent for diplomacy. The account of the 1921 reconnaissance was written by Howard-Bury and is entitled *Mount Everest, the Reconnaissance, 1921*.

Initially, the MEC had determined that the ascent of the mountain was the overwhelming objective; surveying, exploration, and science would have to take a backseat. In a short amount of time, the committee came to realize—influenced by the likes of Freshfield and Professor John Collie—that it would be much wiser to use the available manpower for a reconnaissance rather than full-on assault. Recall that at this time the route to the mountain was still not known and hence potential climbing routes were an even larger mystery. Younghusband stated in the forward to Howard-Bury's 1921 narrative, "The mountain had therefore to be prospected from every side to find a comparatively easy route and to make sure that no other easier route than the one selected existed." With statements like this, it was obvious that reaching the summit was everything. With this in mind, the MEC then proposed that the attempt on the mountain be postponed until the following year, 1922. At that time, no expense would be spared to get a man to the top.

The committee selected a blend of Alpine and Himalayan veterans mixed with some new blood to carry out the reconnaissance. The old hands were Harold Raeburn and Dr. Alexander Kellas; the up-and-coming generation were represented by George Mallory and Guy Bullock. The latter was an old schoolmate and climbing partner of Mallory's. It was envisioned that the latter two would form the nucleus of the climbing team for the 1922 attempt. Also joining the expedition was Alexander Wollaston, who went as both naturalist and medical officer. Since this was now a reconnaissance and not an assault, surveying and science were back on the schedule. Henceforth once the expedition had arrived in India, it was joined by two experienced Survey of India officers—Henry Morshead and Oliver Wheeler. The latter would also take on the role of photographer. Morshead, as we will see in a later chapter, had surveyed much of the lower Tsangpo River in the Eastern Himalaya on a 1913 expedition. They were assisted by two Indian surveyors: G. Singh and L. Singh. A Dr. Alexander Heron also joined as geologist.

Funding was not provided by the British Government; it came via the Alpine Club and Royal Geographical Society. Interestingly, on p.13 in the February 25, 1921 edition of *The Times*, there was an appeal for funds by the Alpine Club to the public to help cover the cost of this expedition. The next day, the paper ran a sizeable article written by the then chairman of the Alpine Club, Professor Collie, giving the public an overview of what the reconnaissance expedition hoped to accomplish.

Like many earlier Himalayan expeditions and dozens that followed, the Brits, their cadre of porters, and some 100 mules departed from the important hub of Darjeeling, the now-famous hill station in West Bengal. The trek across Sikkim, which began on May 18, followed a northeast course; it was plagued by heavy rains even though the true monsoon had not yet reached the Indian subcontinent. They crossed over into Tibet via the Jelep Pass and down into the relatively fertile Chumbi Valley. This was the main trade route between east India and Lhasa; most of the larger towns of southern Tibet were established astride this track. One tradition that was started by this expedition and was subsequently adhered to was the visitation of local monasteries and temples that lay along the trekking route; this included hobnobbing with local and regional officials. This served two purposes; it satisfied the curiosity of the expedition members as regards the 'mysteries' of Tibet, and more importantly it was a form of public relations with the locals.

The Tibetan Government in Lhasa had given the expedition *carte blanche* when it came to procuring supplies along the route, but it was actually up to the local authorities to facilitate the expedition's forward progress by providing transport (manpower, mule, horse, yak) and supplies. Hence frequent negotiations were needed as the expedition moved from one district to another; new authorities and hence officialdom had to be placated in each district. Visiting the temples and shrines as the guests of the authorities was typically followed by sessions of tea drinking. All of this was in large part a necessity in order to smooth relations and keep the negotiations moving forward.

When the expedition arrived in the village of Phari, the fifty-three-year-old Dr. Kellas started to manifest the first signs of a serious illness. After several days, he could no longer walk, so he was carried on a litter. It appeared that he was gaining strength as they approached the important village of Khamba Dzong (modern name is 'Gangbazhen'), but then he suddenly died. His demise was attributed to heart failure, enhanced by his strenuous climbing program the previous winter, hardly an adequate answer by modern standards. He had been ill on and off for the previous two years, so in some respects this was not totally unexpected. Since they were in Tibet, nothing else could be done except to give him a proper burial. He is buried on a hill just outside of town of Khamba Dzong, with a view of his beloved Himalaya.

The expedition moved on. Outside of Khamba Dzong, the track ran to the west-northwest and provided the expedition with its first views of Mt. Everest, about 95 miles distant. By this time, the expedition had left the main track which links the Chumbi Valley with Lhasa. Since the expedition was now *off-piste*, the majority of local inhabitants that they encountered had never seen a European, and hence many were quite shy at first contact. Morshead and the two Singhs were working on the survey as the expedition slowly threaded its way towards the mountain. The highlight of this part of the trek was the fertile plain just east of the village of Tinki; a large number of waterfowl were resident in the local marshes. On the negative side, the sand flies were legion. However, most afternoons the wind was so strong that it drove the flying insects away but lofted silt skyward. The winds typically abated once the sun had gone below the horizon.

The next outpost of civilization was the large village of Skekar Dzong and its imposing monastery, which was built on the hill overlooking the village. The monastery contained a 50-ft-high statue of Buddha. Several more days of travel saw the expedition arrive at the village of Tingri Dzong a month after it had departed Darjeeling. They were some 25 miles north-northeast of Everest. Since this region was *terra incognita*, Howard-Bury determined it was a good location to establish a basecamp in order to scout the approaches to Everest.

The expedition's manpower was split into various small teams so that they could cover as much ground as possible in the least amount of time. Mallory and Bullock were sent south on a direct line to Everest. Howard-Bury and his Tibetan aid, Poo, explored the Khumbo (19,005 ft) and Pusi passes located to the west of Cho Oyu. Another team made a large circuit centered around the Lapche Kang; they came within 30 or so miles of Shishapangma. Howard-Bury did not explain why he sent a team so far west as this last one.

From the village of Zambu (~16,000 ft), the expedition was able to obtain its first close view of the northern slopes of Everest. Regarding this view, Howard-Bury wrote, "This valley ran right up to the foot of Mt. Everest and seemed an easy approach, but the mountain itself looked absolutely unscalable from this side, showing nothing but a series of very steep precipices." The good news was that the approach through southern Tibet was long but proffered few real difficulties besides the constant wind and dust.

Next stop was the Rongbuk Monastery (~16,500 ft), which at the time the expedition arrived housed some twenty lamas; however, throughout the year up to 300 hermits could be found living in

the area, many in small caves, from which these monks and nuns would spend their days in reflective meditation (Map 11). Farther up the valley, that is closer to the mountain, the expedition came across a smaller monastery. The ecclesiastics did not welcome the interlopers, as it was seen as a distraction from their meditations, which of course it was. But since the expedition had permission from the Dali Lama himself, there was nothing for them to do but bear with the intrusion. In a short amount of time, however, a bond developed between the clerics and the expedition. The clerics asked for Western medicines and in turn they supplied the expedition with small amounts of eggs and other local food stuffs.

Mallory and Bullock, who had spearheaded the reconnaissance on the mountain, were now, in the first week of July, camped along the west side of the Rongbuk Glacier. It is worth a pause in the narrative to sort out some of the local geographical names. Modern maps for example, as do the earliest maps, show four glaciers on the north side of Mt. Everest which contain the name 'Rongbuk.' The term in Tibetan means 'steep ravine' or 'valley of precipices.' From west to east is the West Rongbuk Glacier, which flows from the Nup La (19,173 ft) into the Rongbuk Glacier. This latter body of ice runs south to north and is the glacier that extends furthest down (north) towards the monastery. Continuing to the east, the East Rongbuk Glacier with its upper basin located at the North Col is the most traveled in the region. In past centuries, this glacier would have formed a tributary into the Rongbuk Glacier, but has since retreated a handful of miles up-valley. The primary north side climbing route runs along its eastern margin and then out onto the ice of the upper glacier. Finally, there is Far East Rongbuk Glacier, which lies east of the lower section of the East Rongbuk Glacier. Why 'Rongbuk' is so overused is a mystery. Keep in mind that this expedition was the first time Caucasians had been this close to Everest; there was no map—the expedition was in the process of making one. Many of the geographical and topographical features did not have names, not even Tibetan names; they were assigned over the next couple of decades by various expeditions.

After having established their first camp, Mallory and Bullock went to work instructing the porters in the art of glacier travel and ice craft. A few days later, they took a small party up the West Rongbuk and Pumori glaciers and set up a camp from which they could explore the area. The two climbers referred to this area as the 'island,' which is probably the terrain between the Lingtren (22,027 ft) to the north and Guangming (21,276 ft) to the south. They were able to scale an unnamed peak later surveyed to be at 22,520 ft, probably Ri-Ring. The summit offered up-close views of the North Face of Everest. Mallory also made a multiday foray directly up the Rongbuk Glacier, but the view of the

mountain and its potential routes was not that helpful due to a considerable amount of foreshortening. Meanwhile, Bullock ventured to the Lho La (19,622 ft) and peered over into Nepal, particularly the Khumbu Glacier. In addition, he was able to capture some useful photographs of the west side of the Chang La (North Col), that most important feature on the northeast side of the mountain which came to play such a pivotal role in all of the early expeditions.

Not wanting to leave any stone unturned, or in this case, any approach to Everest unexplored, Howard-Bury and Dr. Heron departed the Rongbuk Valley and trekked to the southeast in order to investigate the Karta Valley. Their trekking route took them over the Doya La (16,810 ft), which provided expansive views of the surrounding countryside. They were pleasantly surprised to find an abundance of wildflowers and shrubs, including dwarf rhododendron—a testament that at least a small portion of the monsoon moisture did make it across the Himalaya and into the very southern part of Tibet. When they reached the Arun Valley, they found a considerable number of settlements. It turned out to be a highly populated region by Tibetan standards; this was of course due to the wetter and milder climate. The locals were able to grow barley, peas, and mustard.

Their main exploratory objective was the terrain of the Kharta district, which lies to the west of the Arun Valley. During the month of July, the expedition focused its collective attention on the region to the east of Everest, basing themselves out of the village of Ringri. Thunderstorms were common on most afternoons and evenings, with fresh snowfall frequent above 15,000 ft. They crossed several passes in this region, the Chug La (~16,100 ft) being the most prominent and ended up venturing westward to the Kama Valley and eventually towards the Kangshung Glacier.

The largest peak in the immediate area is Chomolonzo (25,557 ft, first ascent was in 1954 by the French); the expedition established a camp near its base. When the clouds lifted, the Brits were able to feast on unparalleled views of Makalu and Everest. Mallory and Bullock were able to climb up to ~21,500 ft on a nearby ridge for an expanded view. What they saw of Everest from this angle impressed them; they judged the terrain unclimbable because it was ‘protected’ by a series of hanging glaciers which on occasions released masses of ice onto any proposed route. Some days later, the expedition moved its base of operations farther north (Kharta Valley), which they hoped would lead directly to the northeast side of Everest. The two climbers were now joined by Morshead, and the threesome was able—despite the deep fresh snow—to plod up the Kharta Glacier to Lhakpa La (22,350 ft, ‘Windy Pass’). From what they saw of the northeast side of the mountain between the brief breaks in the clouds, they

determined it to be climbable. With the prevailing deep snow and stormy weather, the party descended back into the Kharta Valley to wait for an improvement in conditions.

By mid-September, they were back on higher terrain, although the weather was still not ideal for a reconnaissance of this nature. Nevertheless, Morshead, Mallory, and Howard-Bury were able—with the use of snowshoes—to ascend Kama Changri (20,640 ft), located on the east-west ridge which formed the southern barrier of the Kharta Glacier. They had chosen wisely on the dates because when they reached the summit, the sun was out in full force. They lingered on the summit for three hours soaking in the view. As the monsoon began to dissipate, the weather was improving each day.

Several days later, the climbers headed back to the Lhakpa La, which they ascended in due course. They were rewarded with a heads-on view of the North Col, which Howard-Bury noted: "The way from the glacier up to the North Col looked steep and unpromising, and we doubted whether it would be possible to take laden coolies up, even to this point." Not exactly an encouraging report on the route that they had been trusting would lead to the summit. Mallory and Bullock were then joined by Wheeler and several porters; this party descended the west side of Lhakpa La onto the upper East Rongbuk Glacier. From there, they headed towards the base of the North Col. They spent a cold night at around 22,000 ft. The next morning, they ascended the slopes to the North Col in good order. Mallory wrote that he entertained thoughts about venturing higher, but the rest of his team had reached their limit. After a second night in their camp below the col, which was buffeted by the winds, they decided to return over the Lhakpa La while they still had the energy to make the return climb.

Shortly thereafter, the reconnaissance phase of the expedition was complete, and it was time to commence the return trek to Sikkim as it was now late September. The expedition took the trail that followed the Yaru River Gorge northward, and then rejoined their inbound route to Sikkim.

So, what were some of the conclusions, observations, and accomplishments of the 1921 Mt. Everest reconnaissance? They observed that by early July (well into the monsoon) that the upper mountain was cloaked in snow. Despite the menacing terrain around the North Col, they did feel this was the best route up the lower part of the mountain, while the Northeast Ridge/Shoulder might be the key to the upper mountain. The brief glimpses they were able to garner of the upper ridge did show that it would be challenging due to its narrowness and protruding rock features. One interesting aspect of the reconnaissance is that they never ventured up the East Rongbuk Glacier from the Rongbuk Valley, and we are never told why in the official narrative. Mallory suggested, based on what he had seen of it

from the Lhakpa La, that it would probably be the easiest route to gain access to the North Col. They also concluded that the best period to climb seemed to be in the pre-monsoon period, when there was less snow and air temperatures would be in the process of warming. Most successful climbs over the intervening decades have of course occurred in the pre-monsoon period; however, as the expedition departed Everest in late September, right after the conclusion of the monsoon rains, they did not linger in the area long enough to see what post-monsoon conditions were like.

Besides the primary focus on routes and weather, a host of additional science was conducted during this expedition. Wollaston, for example, collected a multitude of specimens of flora and fauna, while Dr. Heron sorted out the geology of the region. Wheeler, Morshead, and surveyors produced a map and the many photos taken by the members of the expedition were used in the photo-survey as well. By all measures, this was a highly successful expedition; it laid the groundwork for the many subsequent expeditions that trod over this ground. Since the reconnaissance expedition did not arrive back in England until November, the MEC did not have the luxury of a lot of time to organize the 1922 venture. This quick turnaround is due to the fact that most of the expedition's canned and package foodstuffs, as well as all the camping and climbing gear, had to be on board ship by late January or early February at the latest. These dates had to be adhered to if the expedition wanted its supplies to arrive at the dock in Calcutta by early- to mid-March.

Chapter 27

Everest: 1922 and 1924

Leadership of the mammoth 1922 expedition fell on the shoulders of Brigadier-General Bruce, who was now available and eager for the challenge. Colonel Edward Strutt, who had considerable Alpine climbing experience, was selected to be the deputy leader. George Mallory was back as one of the lead climbers. Captain George Finch, who had been selected for the 1921 reconnaissance but unable to make that journey, was the second lead climber and the most knowledgeable team member regarding the use of supplemental oxygen (sometimes referred to as 'bottled oxygen'). Another strong climber added to the roster was Major Edward Norton, an artillery officer stationed in India. The climbing team was rounded out by Major Morshead, who as you may recall was the surveyor on the 1921 reconnaissance, and a Colin Crawford, who worked for the Indian Government and was a respected rock climber.

Two new medical officers were added as well: Dr. Howard Somervell and Dr. Arthur Wakefield. The Himalayan veteran Dr. Tom Longstaff went as naturalist and medical advisor. The Mount Everest Committee decided that this effort should be well documented on film, so they recruited Captain John Noel to act as photographer-cinematographer. Since transportation and logistics were going to be a major concern with this large of a party traveling far from supply lines, two transport officers were hired: captains Geoffrey Bruce (a young cousin of General Bruce) and C. John Morris, both of whom served with Gurkha regiments and hence knew the challenge that they faced. The expedition was blessed to have engaged the service of Karma Paul, a young man who acted as their Tibetan interpreter.

Dozens of Gurkhas, who General Bruce had served with for decades, were employed as high-altitude porters. Obviously, most expedition personnel were active or retired Army officers; the advantage of this was that they knew how to take or give orders. MEC's approach to this expedition and those that followed was to have their expeditions run on military lines, that is a strict top-down hierarchy. In addition, since most of the men had served in India at some point in time, they often had some experience in the Himalaya or Karakoram.

Long before the expedition left the shores of England, there had been considerable debate on the use or non-use of supplemental oxygen by the climbers. The bottles are filled with 100 percent oxygen, unlike scuba tanks which are filled with air (21 percent oxygen) under pressure. There were two concerns regarding its usage: first, the weight of the gear, which was generally 30 lbs, but at times could weigh even more. The second concern was what would happen if the climbers were high on the

mountain and for whatever reason, their oxygen ran out or quit functioning; would they collapse due to the sudden lack of oxygen? No one knew the answer to this question; nevertheless, the medical chemist and doctors persuaded the MEC to sanction its use. Therefore, the MEC commissioned a new apparatus to be designed for the attempt.

Another important decision had been made many months prior: should the attempt be made in the pre-monsoon or post-monsoon season? Accumulated knowledge of this part of the Himalaya by previous explorers—and as we have just seen, the work of the 1921 reconnaissance expedition—suggested that the pre-monsoon season was the most favorable. However, as General Bruce pointed out in the beginning of his narrative, *The Assault on Mount Everest, 1922*, being given a pre-monsoon start date by MEC required a considerable number of logistical calculations and planning. Here is the dilemma they faced: the expedition would want to make at least one if not multiple summit attempts just prior to the start of the monsoon, when air temperatures are warmest and windspeeds are typically at their lowest. The onset of the monsoon in this region, however, varies considerably; some years it commences in mid-May and others not until early June. As a margin of error against an early onset, the climbers should be in position to make their summit attempts no later than mid-May.

The next consideration is the number of days after the establishment of basecamp that would be required for the climbers with assistance from the high-altitude porters to establish their highest camp. A reasonable estimate would be twenty to twenty-five days. Still working backwards in time, if it takes four to five weeks for the expedition to make the trek from Darjeeling to basecamp, the expedition should leave Darjeeling no later than the second half of March. This timetable would leave little margin for unforeseen delays such as in transport, weather on the mountain, and route conditions. Recall that although Mallory and Bullock had been to the North Col in 1921, they had not set foot on the terrain above. The down-sloping rock slabs on the upper mountain were a major question mark—no one had any idea how much time it would take to climb this section.

One might be tempted to commence the trek in February, so the expedition would have plenty of time to reach the Rongbuk Valley and get the lower camps established without any rush. However, mid-winter on the Tibetan Plateau is brutal; cold temperatures and lots of wind are the norms. Various respiratory illnesses are commonplace amongst Westerners who trekked across Tibet, due to the very low relative humidity and the airborne dust. This would take its toll on the climbers over the long haul, not to mention the additional supplies that would have to be transported hundreds of miles if an expedition was extended in time.

It is interesting to note that in the opening paragraph of Chapter 2of General Bruce's narrative, just after the expedition had arrived in the Rongbuk Valley, he addressed these issues: "Now began in earnest our race against the monsoon. I have often been asked since my return, whether we should have not done better if we had started sooner. I think none of us would have cared to have arrived at our Upper Rongbuk camp a fortnight earlier in the year … the temperature and the coldness of the wind was as much as any of us could keep up with and still keep our good health." There is an axiom that the higher one climbs, the more important weather becomes in the mountaineering equation. The early Everest expeditions found this out by trial and error.

General Bruce was in Darjeeling by early March, making sure preparations were on track. His attention to detail is illustrated in the following way: a handful of local men applied to be expedition cooks; instead of reading over any scraps of paper (chits) that might praise their culinary prowess on earlier expeditions, the general took them out into the hills beyond Darjeeling and made them cook for a couple of days using expedition foods and equipment. Nothing like testing your men prior to the real show.

The expedition rolled out of Darjeeling on March 26 via the local railroad. Although several expedition members were left behind in order to conclude various aspects of the preparations, such as the bottled oxygen which arrived late, they were able to catch up with the main body in short order. Once they were on the trail, the expedition traversed the Jelep La into the Chumbi Valley of Tibet as so many travelers had done previously. Once they had crossed the border, most of the supplies were carried by mules—expedition members could ride ponies or walk. Further into the trek, they were able to recruit some yaks as beasts of burden as well.

The expedition arrived in due course without excessive trial or tribulations at Rongbuk on May 1, after five weeks on the trail. They camped this first night near the monastery and were well received by the head lama. In fact, the head lama told the expedition's translator that General Bruce had been a lama in his previous life—a fact that the general himself had not been aware of. The next day, basecamp was established near the terminus of the Rongbuk Glacier. By the time the expedition arrived there, it was employing some 300 beasts of burden. Besides the thirteen Europeans, there were over sixty Tibetans and Indians on the payroll.

While most of the team got to work establishing basecamp (~16,500 ft) and sorting through all the loads, Strutt led a small reconnaissance party up the East Rongbuk Glacier. Recall that the previous summer Mallory and Bullock had looked down on this lower section of the route, but had not actually been able to set a boot print on the lower glacier. Hence Strutt needed to determine where to establish the various intermediate camps and the placement of their advanced basecamp. Camp I was established some three miles from basecamp at around 17,800 ft; it was just inside the valley in which the East Rongbuk Glacier resides, but off the ice. The team found enough loose rocks strewn about that they were able to construct several shelters and then roof them with tarps.

It was at this stage that there was a labor crisis; as we have seen from earlier chapters in this book, this was not the first expedition to be hit by one, and certainly not the last—labor strikes and desertions would plague Himalayan expeditions for decades to come. As it turned out, about half of the local porters who had initially said they would stay on after they reached basecamp and ferry loads up to the lower camps, decided to head for their homes. General Bruce had to raise the payrate in order to recruit whoever was willing to work from the surrounding villages; some did take up the offer, but the lack of porter-power did cause some real concerns. Labor shortages was an issue for future Everest expeditions as well; one of the main problems was that May was a time when the farmers (most everyone in Tibet at that time) had to work in their fields.

Despite the labor shortage, Camp II (19,800 ft) was established on the western side of the East Rongbuk Glacier and Camp III (21,000 ft) on the western moraine due east of Changtse (North Peak). This latter camp also served as the advanced basecamp. The route from basecamp through Camp I and on to Camp II was non-technical, mainly a hike. From Camp II to Camp III, however, some glacier travel was involved and hence the recently recruited porters—who lacked training on glacier travel—did not venture past Camp II. While the lower three camps were being fully stocked, Mallory and Somervell pushed the route forward, reaching the North Col on May 13 (Camp IV at 23,000 ft). The weather during the first half of May had not been ideal for the undertaking; in fact, it was still very cold and windy. During the second half of May, the weather did improve somewhat, but only marginally.

On the ascent to the North Col, Mallory and Somervell ran into a considerable amount of bare ice, significantly more than they had anticipated based on the reconnaissance of the previous summer. Nevertheless, their expectations remained high as they gazed up at the North Ridge; they knew that it was climbable. The two climbers returned to Camp III, where they spent the next three days resting and acclimatizing. On the third day, a large consignment of supplies arrived, as did Strutt and others. General

Bruce, who remained at the lower camps, had given Strutt the authority to determine the composition of the team who would make the first summit attempt. After a brief conference, it was determined that Norton and Morshead would join Mallory and Somervell and make it a foursome.

The route used by these early British attempts above the North Col was up a feature that is referred to by various names; the correct name with regard to geography is the 'North Ridge.' However, since the late 20th century it is generally referred to as the 'Northeast Ridge,' which is unfortunate as there is a true Northeast Ridge route, which was attempted by the Bonington expedition in 1982. The confusion exists because the North Ridge eventually (~27,6000 ft) merges with the much larger Northeast Ridge. Additional names for this route are the 'Northeast Shoulder' and the 'Northeast Arête.'

On May 17, and again on the 19th, loads were carried up to Camp IV with the help of ten porters. Upward progress continued over the subsequent days as the foursome established Camp V (~25,000 ft) on the North Ridge. The climb above the North Col had been quite straightforward—the primary evil was the relentless wind. The climbers hoped to reach the summit without any additional intermittent camps, which of course was wishful thinking on a grand scale.

On the morning of May 21, while Morshead remained in camp because he felt ill, the three climbers plodded upwards intent on making it to the summit or giving it an honest attempt. Note that no bottled oxygen had been carried up the mountain to this point. Above Camp V, they did not encounter any technically difficult terrain; however, their pace was slow—around 400 ft per hour. By 2 p.m., when they were a few feet short of 27,000 ft, it was obvious to the climbers that their attempt was over. They descended back to Camp V. When they arrived at Camp V, they found that Morshead's illness had abated; he therefore decided to join his comrades on their descent to North Col. While roped together, three of the men slipped, but were held by a quickly placed ice axe in firm snow from above. The team did not arrive at North Col camp until midnight.

The next morning, the party descended to Camp III, where it was discovered that Morshead had suffered significant frostbite on the fingers of both his hands. The first summit attempt on the world's tallest mountain had fallen well short, although some valuable lessons had been learned. There would be a second attempt and this time the climbers would use supplemental oxygen. Finch, who had suffered some stomach trouble shortly after arriving at basecamp, had recovered by mid-May. He was the resident expert on the oxygen apparatus, so a natural choice to give the unit a trial run high on the

mountains. His climbing companions for the second summit bid were Geoffrey Bruce, and the strongest of the Gurkhas, Tejbir.

At Camp III, the oxygen units had to be modified as they leaked and the masks provided by the manufacturer were judged useless, although the narrative does not tell us why they were of no value. Finch and others had tested the oxygen units lower on the mountain but why they waited until the cold conditions of Camp III to make their modifications is a mystery. In time, the oxygen units were modified, and the trio reached the North Col while using supplemental oxygen on May 24. The weather was good the next morning, so they continued their ascent using bottled oxygen—what the porters began to call 'English air.' By late afternoon, they had erected a single tent at ~25,500 ft on the North Ridge amidst falling snow and the ever-present wind. The speed of the wind increased over the evening hours; during the early hours of the night the three climbers were holding down the tent harboring real fears of being blown off the mountain. The strength of the wind diminished the next day, but after a harrowing night, the threesome decided to rest in camp and continue the ascent the following morning—that is, if conditions allowed. Having a large supply of bottled oxygen on hand, they spent the second night sucking on the tubes that delivered the English air (no masks were used). Finch claimed that "we slept well and warmly."

The threesome plodded upwards the next morning; Tejbir, who was carrying the heaviest load, made it to just over 26,000 ft before Finch and Bruce sent him back to camp. Shortly thereafter, the two climbers moved off the ridge, onto the Northeast Face, in order to seek some protection from the increasing winds. They found that the down-sloping slabs made "the securing of adequate footholds difficult." Around noon and at an elevation their barometer read as 27,300 ft, they decided that they should turn around as the summit was well out of reach. It was a fine effort, especially since this was Geoffrey Bruce's first real climbing experience—but he paid the price with frostbitten toes.

Undaunted by their first two failed attempts, there was a third attempt to reach the summit; this party was composed of Somervell, Crawford, and Mallory. They determined from the outset to use supplemental oxygen. Heavy snow covered the mountain during the first week of June, but as they proceeded from camps III to IV, the weather gods granted them several warm and sunny days. Some 600 ft below their North Col camp, with Somervell in the lead and a string of roped-up porters below, an avalanche released. In the end, seven porters were killed while all the climbing team emerged unharmed. This, as can be imagined, ended the aspirations of the climbers on the third summit attempt.

Thus, the first chapter on the assault on Mt. Everest had been written. On the positive side, the first and second climbing teams had reached elevations which exceeded those of anyone else on any mountain at that point in time. In addition, the climbing—that is, the route itself—had not been that difficult. The negatives: the two summit teams were seemingly defeated by strong winds and cold air temperatures. It is fair to ask whether if the weather had been more favorable, would either of the teams have reached the summit and returned safely? I would say unequivocally no. Their camps were too few in number; there is no reasonable expectation that in that era men could be expected to climb 3,500–4,000 ft at that extreme elevation, over new ground in one continuous push. They were basing their abilities on Alpine standards; they had yet to learn that even with the use of supplemental oxygen, the conditions at those elevations were just too debilitating for men to ascend the same amount of elevation that they could easily do in the Alps over the same time period.

Finch noted in the conclusion of General Bruce's 1922 narrative that the use of supplemental oxygen should begin in the 21,000–23,000 ft elevation range. He suggested that the extra weight of the actual unit and bottles of oxygen are easily compensated by the fact that the additional oxygen in the climber's system not only promotes a faster rate of ascent, but it reduces the impact of the cold air temperatures and hence can limit the incidences of frostbite. Finch went on to suggest that dumps of bottled oxygen be established at various points high on the mountain, including the zone above their single high camp. Of course, all of the carrying and distribution of the oxygen units and dozens of bottles of oxygen that would be required for such an undertaking would be manhandled by the porters. The climbing team would not touch the oxygen units until it came time to use them. The porters were essentially the beasts of burden on the mountain; they would wear themselves out getting the climbers and their gear into position so that the latter could make the summit push while still relatively 'fresh.' Somervell, in contrast to Finch, was of the opinion that climbers could acclimatize, which of course would take some time, but that the mountain *could be* climbed without supplemental oxygen.

In his concluding remarks with respect to the expedition, Finch also advocated the smoking of cigarettes at high elevations, a practice that many accomplished climbers over the decades have followed, probably more out of habit than for its supposed efficacious affects. The logic is that the additional carbon dioxide produced by the smoldering tobacco is quickly carried in a climber's blood stream, which promotes involuntary breathing. The climber who smokes does not then have to consciously take deep breaths. This is most beneficial during periods of sleep, where the lack of oxygen intake often forces the climber to awaken and gasp for breath.

Mallory was also of the opinion that future expeditions should use 'English air' on their summit bids. He also acknowledged that failure to reach the summit in 1922 was in part due to the stormy weather, but he also realized that in the future they would need to establish at least one additional camp from which to make their final assault. In the end, seven lives were lost on the 1922 expedition, with many more to follow in subsequent years. But the deaths of the porters were in no way going to inhibit the juggernaut known as the British Mt. Everest expeditions.

1924: The Big Show

Confidence was high in Britain as this expedition was organized. Two teams had climbed high on the mountain in 1922; valuable lessons had been learned about the route, weather, human endurance, and the use of supplemental oxygen. The summit was a foregone conclusion; it was just a matter of getting the men in place, hoping the weather cooperated for a few days, and then letting them climb for God, King, and country.

Much of the core of the 1922 expedition had signed on once again. General Bruce was at the helm, with Norton as his second in command. Odell, Geoffrey Bruce, Mallory, and Noel—who would take photographs and shoot footage for a movie—were returning. New blood consisted of Bentley Beetham, a schoolteacher with a number of Alpine summits under his belt. John de Vars Hazard was an engineer and had spent some time living in India; he was a well-rounded mountaineer. Richard Hingston was the new medical man, who was the resident expert on supplemental oxygen. Andrew Irvine was a twenty-two-year-old Oxford student who was known for his rowing abilities but had a very modest climbing résumé. In 1923, he participated in an expedition to Spitzbergen, so had some experience with cold weather, snow, and ice. He was recommended to the MEC by Longstaff and Odell, the latter having been the leader of the Spitzbergen expedition.

On March 25, all was in place, so the expedition departed Darjeeling; they followed the now customary route, arriving at basecamp on April 29 during a snowstorm. However, the trek across Tibet was not clear sailing. General Bruce had an attack of malaria, so he was evacuated to Sikkim; subsequently, Norton took on the roll as overall leader, and Mallory became leader of the climbing team. In the last stages of the trek, a number of porters deserted the expedition, which left them once again shorthanded with regards to manpower.

One interesting aspect of these early expeditions—and it illustrates the military lines on which they operated—is that during the trek across Tibet, Norton was already designating climbing groups and the order of summit attempts. Well-intended plans generally went awry on these expeditions; when it came to the climbers, the most frequent cause was sickness followed by a lack of acclimatization. If one includes the whimsical nature of the weather, then there goes the best-conceived plans. In any case, it does show the thoroughness of the planning, and since most of the men were currently in or had been in the Army, a military culture was to be expected.

The lower camps were established in early May; a major blizzard hit on the 10th just as they were attempting to get Camp III ready for habitation. The blizzards that hit during the first half of May not only made expedition life that much more difficult, they also weakened the resolve of the porters, who often refused to carry. This, as you might imagine, was a major blow to the expedition. Nevertheless, the climbers soldiered on. A rather weak summit attempt occurred during the third week of May. This effort was made by Mallory and Geoffrey Bruce. They had been able to establish Camp V at 25,300 ft during the first days of June. But the porters would not budge any higher; so, the climbers came back down.

By June 4, Norton and Somervell were making the second summit attempt. They were able to finally establish Camp VI at 26,800 ft after considerable tribulation. This was the highest camp; from here, they were going to make their dash for the top. On summit day, they continued up the North Ridge and then traversed across the North Face, encountering the Yellowband, a section of nearly horizontal sandstone ledges. They made good progress, moving diagonally. Somervell was troubled by a sore throat, so stayed behind while Norton pushed upwards. He made it into the Great Couloir, which was full of unconsolidated snow; his pace ground to a halt. Despite the good weather, he turned around at an elevation later determined by theodolite to be 28,126 ft. This attempt, the highest to date, was made without supplemental oxygen.

The next push for the top was made with supplemental oxygen by Mallory and Irvine. Details are of course lacking, but what we do know is from what Odell observed from the lower sections of the North Ridge. It was generally cloudy and windy that day, with a fresh deposit of snow on the summit rocks. Odell last saw the pair in a break in the clouds at 12.50 p.m.; they were near the Second Step, headed towards the summit. It also appeared that they were moving one at a time (were they belaying each other?). Everyone below waited in anticipation for news of the success or near failure of this third attempt. And they waited. Two days after spotting the twosome high on the mountain, Odell ascended

to Camp VI to check on the whereabouts of Mallory and Irvine. There was no sign that they had returned to the camp. It readily became apparent that the two were either stranded higher up or had died in the attempt. As additional days passed, and with no sign of the climbers, the expedition began to deal with the loss. By mid-June, basecamp was struck and the expedition began the homeward trek.

Like the 1922 expedition, while the climbers had been trying to reach the summit, other work was being accomplished at lower elevations. The ever-present surveyors were focusing on the area around the West Rongbuk Glacier. By the time the expedition arrived back in Darjeeling, some 500 species of plants had been collected, and an amazing 10,000 species of spiders, birds, rodents, etc. Odell had also been conducting work in the fields of geology and glaciology.

What can be concluded about this expedition? A new altitude record had been achieved, 28,000-ft-plus. It is important to keep in mind that the north-northwest side of Everest—by virtue of being on the edge of the Tibetan Plateau—is quite dry, which translates in the glaciers not extending as far down the mountain as they do in other regions of the Himalaya or Karakoram. The technical climbing on this part of Everest really does not actually start until just below the North Col, at approximately 22,500 ft. The climbing on the North Ridge was fairly straightforward; all of this added up to the fact that teams could get high (>27,000 ft), much higher than on any other mountain climbed at that time, 'relatively' easily. The difficult section was the last 1,500 ft to the summit.

The use or non-use of bottled air was still a matter of choice, and would remain so for years to come. Norton and Somervell had climbed remarkably high without it, showing that man could exist—at least for short periods—at these elevations. It was still undetermined whether the benefits of the supplemental oxygen, of which there were a number, outweighed the actual weight of the apparatus, which was considerable. In other words, a climber would without question gain an advantage from the increase of oxygen in their respiratory system; however, would the labor involved in carrying all the gear needed to accomplish this negate the benefits? Would it slow the climbers down?

There are several interesting articles in the May 1925 issue of *The Alpine Journal* that were written by two members of the 1924 expedition. The first is by Norton and is titled "The Problem of Everest"; it dealt with the logistics of the climb—how to get men and the necessary material to the various camps. It contained some interesting charts and graphs; Norton obviously went about the logistics of a climb as a scientist or engineer would outline a major research project. The second article,

"Physiological Difficulties in the Ascent of Mount Everest," was penned by Hingston, the expedition's medical officer. It provides insight into what was known about high-altitude physiology at that time.

There was some significant backlash from the 1924 expedition in subsequent years, and it had nothing to do with the deaths of Mallory and Irvine. Noel, as you might recall, had been commissioned to photograph and shoot film of the expedition; he had big plans to create a movie from the cinematic footage that would be played in theaters throughout Europe. He was able to capture a lot of good footage, but at the conclusion of the expedition he had a serious problem: no one had reached the summit. He feared that without a dramatic finale, his movie was going to be a major failure, which was a reasonable conclusion. Keep in mind that the loss of Mallory and Irvine, although a news event, was not the sensational news it would become decades later. For example, p.12 of the June 21, 1924 issue of *The Times* ran a short article about the expedition including several lines regarding the death of the two climbers. In other words, the public would not flock to see the last images of Mallory and Irvine high on the mountain—another drawing card was needed.

The solution was that Noel teamed up with Francis Younghusband to produce a hybrid theatrical-movie production called *The Epic of Everest*. Seven Tibetan lamas were imported to the UK, and stage props were constructed in the theaters where the movie was going to be shown. The lamas made public appearances and interviews; they danced and chanted in the theater prior to the start of the movie—it was a major public relations blitz. It did generate a lot of interest in the movie; however, there were several issues that cropped up in time. The claim that the seven lamas had come from a monastery near Mt. Everest was simply not true. Only one of the seven was a lama; the others were just Tibetan young men that Noel had recruited for the tour. None of the seven were from the region around Mt. Everest. As it turns out they lamas were not provided with proper travel documents which should have been obtained by Noel prior to leaving Tibet- it look as if the lamas had been hoodwinked.

In addition, the movie portrayed the Tibetan people—that is, the locals that the expedition encountered or employed—as being extremely primitive. All of this did not sit well with the government in Lhasa; they saw this as exploitation (which it was) and sensationalism; it made Tibet and its people look uncivilized. This whole debacle became known as the "Affair of the Dancing Lamas." (A scholarly article was written about it as late as 1996. See *P. Hansen, Am. Historical Rev.*) A complicating matter was that in order to finance this expedition, film rights had been sold in advance. Hence there was considerable pressure on Noel and Younghusband to turn a profit with their movie.

The only recourse the government in Lhasa had, and it was a powerful one, was to deny the Brits further access to Mt. Everest from the north. After the 1924 expedition, the MEC was still willing to sponsor another attempt, yet nothing could be done until they received the blessings of Lhasa. The negative fallout of the "Affair of the Dancing Lamas" took time to diminish; in fact, it was nine years before the MEC was given the nod to return to Everest. There was an additional factor besides the Dancing Lama Affair. After the climb had ended the expedition split apart: a group went to the Lhatse region to survey while another group went into the Rongshar Valley for some rest-and-recuperation. Both of these ventures were off permit, a minor indiscretion which the authorities had overlooked during the first two British expeditions. Another point was that Frederick Bailey, the highest-ranking Brit that had continuous contact with the Tibetan government, and who at this time was living in Tibet at Gangtok, for unknown reasons had little interest in supporting Everest expeditions. It has been suggested that Bailey tried to undermine the early British Everest Expeditions, nevertheless, after the Dancing Lama Affair he would not have needed to added fuel to the flames.

Finally, in August 1932 Lhasa granted permission, which meant that the MEC would have to wait for the following summer to mount another attempt. Younghusband, in the preface to his book *The Epic of Everest* (1931), written just before the Tibetans once again granted permission to the British, said: "Immediately (after) the last expedition returned—and at the earnest request of the members themselves—permission was sought from the Tibetan authorities for another expedition to proceed to the mountain. But the Tibetans were alarmed. On each of the three expeditions, deaths had occurred. Was not this sufficient warning that the gods who dwell on Mount Everest were enraged? They must not be provoked again. So, for the present permission is withheld." This was classic misdirection; the real reason permission was withheld for nine years is because of aforementioned negative publicity generated by the Noel-Younghusband theatrics, not the deaths of seven porters and two climbers.

Chapter 28

Everest: Fresh Blood

After a passage of nine years and the loss of Mallory, who had been the primary climbing force in Britain in the early 1920s, a new generation of climbers would be able to try their luck on the big mountain. This new breed, unlike the previous group, had considerable high-altitude experience before they attempted Everest. Four members of the 1933 expedition had been on the successful 1931 Kamet expedition: Frank Smythe, who had been the leader on Kamet; Eric Shipton; Eugene Birnie, an Army officer; and the medical doctor Raymond Greene. Smythe had also participated in the 1930 international Kanchenjunga expedition, so Everest would be his third big peak. The climbing team was rounded out with Wyn Harris, who had climbed extensively on Mt. Kenya, and Lawrence Wager, who was a professor of geology at Reading University and a well-rounded mountaineer as well. This was of course early in Shipton's Himalayan career, but he was quickly making a name for himself. The expedition was under the direction of a forty-seven-year-old civil servant in the Indian Government, Hugh Ruttledge. Hugh had trekked and climbed numerous times in the Kumaon district of the Indian Himalaya but did not have any big mountaineering experience.

The climbers arrived at basecamp on April 17, several weeks earlier than any of the previous expeditions. Unfortunately, despite the early start, the weather was unsettled; it was windy with frequent snowstorms. Camp IV was established just below the North Col; as it turned out, the configuration of the snow/ice on and below the col had changed considerably since 1924. The salient changes were a long section of bare ice, and a 40 ft, slightly overhanging ice wall that had to be scaled.

This expedition introduced a novelty for mountaineering—a telephone line was laid between camps III and IV so that communications between the lead climbers and basecamp could be maintained, at least from what was known as Camp IV (North Col). Camp V was placed at 25,700 ft and Camp VI around 27,400 ft. It was a good effort to date considering the condition of the route and the poor weather. In addition, a shortwave radio was taken to basecamp, from which the team could listen to various BBC broadcast and more importantly obtain a daily weather forecast that was issued on their behalf from India.

By the end of May, Harris and Wager were in position for a summit attempt. They spent an unsettled night in Camp VI but pressed on in the morning. Some 200 yds east of the First Step (a protruding rock feature on the ridge) and 60 ft below the crest of the North Ridge, they found an ice axe

that could only have belonged to either Mallory or Irvine. However, there was no other discarded gear or any further evidence as to what might have happened to the ill-fated climbers. (Sometime later, it was determined that the ice axe had belonged to Irvine. Mallory's frozen body was found in 1999, roughly 800 ft below where the axe had been found. Irvine's body has not been found to date.)

The two men were able to climb around the First Step, but the Second Step looked too difficult, so they cast an eye elsewhere. They spied a gully that looked like it would allow them to bypass the Second Step and then regain the ridge above. As they traversed some distance onto the face, which consisted of down-sloping ledges, they found that the gully was nothing but a shallow depression and was in reality no help. They continued to traverse but it was all friction climbing; there was no way to belay each other. Around 12.30 p.m., after seven hours of labor, at an elevation just over 28,000 ft, they came to the realization that further progress was futile.

Several days later, Smythe and Shipton made their own summit bid. It was readily apparent shortly after the pair departed their high camp that Shipton was not 100 percent; he had been suffering indigestion for several days and had not been sleeping well. Hence Shipton returned to their camp while Smythe forged ahead. He reached Harris and Wager's high point by 10 a.m.; the weather was holding, and he had plenty of time left on the clock. However, from that point onwards, the snow-covered ledges were unclimbable. The snow was unconsolidated and Smythe of course was climbing without a belay. Wisely, he also turned back. This was the last summit bid; the mountain was to remain cloaked in its white mantle of monsoon snow for the duration of the summer.

In the concluding remarks of his book summarizing the expedition, Ruttledge offered the following observations and suggestions (*Everest 1933* is the book, but he also wrote several summary articles, see references). It appeared to him that the optimum period for a summit bid was from May 7 through June 15. How he arrived at these dates is unclear—recall that this expedition generally experienced very stormy weather during this same period with only short breaks of suitable weather for summit attempts. Wager proposed an even earlier start date for the expedition; the justification was so that climbers would be established high on the mountain and ready to make a summit push during the second half of May. They would just have to deal with the very cold temperatures in late April and early May but with the consolation that they would be in position for a summit push once the weather allowed. This of course would only work if the climbers remained in good health and did not wear themselves out getting to this position.

The majority of climbers on the expedition had no interest in using supplemental oxygen even though a lighter unit had been designed. Some oxygen was taken but only used for medical necessities.

One of the traditions that this expedition started and which was adopted by succeeding ones was the importation of Sherpas from Solo Khumbu to work as high-altitude porters. Recruits had to travel over the Nangpa La (18,835 ft) to reach the north side of Everest. This was a long route to the mountain and if the pass was choked with deep snow, they often arrived at Rongbuk days later than expected. This tended to delay the establishment of camps, but nothing could be done about it.

Ruttledge also suggested that improved tents and boots were needed at the higher elevations. In addition, the route on the upper mountain was still in question; should climbers stay on the ridge or traverse the Yellowband and ascend via the Great Couloir? Note that bottled oxygen was not used by the climbers on this expedition; it was, however, brought along so it could be used for medical cases. There was mounting evidence that Everest could be climbed without its use. In my opinion, the only reason the summit was not trodden in 1933 was because the accumulation of snow on the ledges made it unclimbable. Smythe was about 900 ft below the summit at 10 a.m. when he turned around; he felt well, and had the route been in good condition he would have gone down in history and would have done it without the use of 'English air.'

One trivial but fun fact about this expedition as related by Smythe in his account *Camp Six* (1937) is that on the trek to Everest, some of the porters somehow managed to procure a Tibetan mastiff. The Brits named her Policey because she was supposed to guard the storage area where all the porter loads were stacked each evening. Policey did a lot more—she became a climbing member of the expedition. She followed the team up the East Rongbuk Glacier, jumping over crevasses as needed and negotiating the contorted terrain. She would sleep out on the ice on brutally cold nights and shake off the crusty snow in the morning. She went as high as Camp III, which was placed in the vicinity of 22,000 ft, possibly an altitude record for a canine.

1935: Another Reconnaissance

It seems odd that the MEC would commission another reconnaissance when four expeditions had visited the mountain over the previous fourteen years—what was left to reconnoiter? As it turned out, the MEC had applied to the Tibetan Government for two permits, covering the years 1935 and 1936. By the time permission was granted for 1935, the committee felt it was too late for a summit attempt, so

they came up with an alternative—a second reconnaissance which would involve fewer personnel, fewer supplies, reduced logistics, and hence a smaller expedition.

Like all committees, the MEC came up with a list of objectives the expedition was expected to accomplish or attempt: 1) Collect weather data during the monsoon as high on the mountain as obtainable. 2) Examine alternative routes on the western side of the mountain, especially the Northwest Ridge. They were also enjoined to take a closer look at the Western Cwn above the Khumbu Glacier. 3) Try new men and monitor their acclimatization in preparation for a 1936 summit bid. 4) Test new foods and new gear. 5) Extend the survey by using stereo-photogrammetric equipment, since a detailed map of the North Face was to be produced. 6) Monitor snow and ice conditions at the North Col.

The mantle of leadership this time fell on the shoulders of Eric Shipton, who was at this juncture starting to blossom into one of Britain's pre-eminent mountain men. Although by this time he had already admitted to loathing large expeditions, he had been bitten by the Everest bug; the infection would remain in his blood throughout his Himalayan days. He decided to accept leadership because on this expedition he only had half of the personnel of the earlier parties, and equally importantly, he had a lot of freedom from the MEC to explore the area around Mt. Everest. The freedom to explore at will was, as we shall see, something he made full use of. In addition, he wanted to show the MEC and other naysayers what a small expedition could accomplish—not only small in terms of the personnel but cost as well.

There were all new faces on this team as regards to the previous Everest attempts; two men, however, were close associates of Shipton and were easily recruited: Michael Spender, a professional surveyor, and Harold Tilman, as we have already discussed. They were to join Shipton on his 1937 Karakoram expedition. Additional personnel were Edwin Kempson, who had climbed in the Alpines; and Charles Warren had some Himalayan experience mixed in with a lot of Alpine work; he was also a medical doctor. The final two slots went to Dan Bryant, an accomplished climber from New Zealand, and a young English medical student, who considering his age, had an impressive résumé of Alpine climbs, Edmund Wigram.

This expedition took a different trekking route from Darjeeling to Mt. Everest. They crossed the Himalaya via Kongra La (16,850 ft) and then remained well south of the 'normal' route as they trekked westwards. This gave them the chance to explore Nyonno Ri (22,060 ft) and Ama Drime (Gyankar

Range), which lie northeast of the Arun Gorge (not far from Noel's 1913 route). They arrived at Rongbuk on July 4, several weeks after the onset of the monsoon.

The team made rapid progress on the establishment of the lower camps, which were placed at or near all the previous sites. Just above Camp III, they found the body of Maurice Wilson, who had attempted a solo climb the previous summer. Wilson was a thirty-seven-year-old Englishman who was on a spiritual quest, in which reaching the summit of Mt. Everest somehow fit into his convoluted program. His epic flight from England to India in a by-plane in and of itself was a major accomplishment. In Darjeeling, he was able to hire a number of Sherpas and then made his way to Everest. He did not plan on eating much while on the climb—part of his spiritual quest—but nevertheless he found the spare food left by the 1933 expedition at Camp III, which supplemented his meager supply. Without the experience of the Sherpas, who remained at basecamp, and with no mountaineering experience of his own, his quick demise was not hard to imagine. The 1935 expedition found his body in the remnants of a small tent which the wind had all but ripped apart. Next to his body was his diary from which they were able to piece together the final weeks of his life. They interned his body in a nearby crevasse and proceeded to push the route up to the North Col. (The 1960 Chinese expedition to Mt. Everest found Wilson's body lying on the surface of the ice and promptly reburied it in a crevasse.)

Shipton, who of course had been on the 1933 expedition, noted that the route below the North Col had changed considerably over the two intervening years. Currently, there was a lot of snow and little in the way of bare ice. On the ascent to the col, the snow appeared to be very stable. They located Camp IV above the col on the lower part of the North Ridge. The plan was to establish another camp in the vicinity of 26,000 ft on the ridge from which they could study snow conditions and the route. If the stars were properly aligned, they would make a dash for the summit. However, the stars were not in their favor; an extensive period of stormy weather settled over that part of the Himalaya. The climbers at high camp decided to descend and wait for more suitable climbing weather.

During the descent, in an area just below the North Col, they came across a slab avalanche fracture zone which was a good 6 ft deep, the crown of which stretched across the slope for several hundred yards. The slide had occurred while the climbers were occupying high camp. This startled the climbers because this was the same line they had taken on the ascent, three days' prior. During that ascent, they had been carefully monitoring the condition of the snow, and it all seemed very stable. Now they found that that 'stable' snow was anything but. It should be noted that only a few inches of fresh snow had fallen from the time of their ascent to when they found the avalanche track, although it had

been quite windy. Needless to say, their collective confidence in their own ability to judge the stability of the snowpack was greatly shaken from there on out.

After the avalanche episode, Shipton—with the consent of the other climbers—decided to forgo any additional work high on Everest. In its place, they went on a climbing spree; virtually everything of mid-elevation was fair game, and they knocked off numerous peaks to the north of Everest in quick succession. They made an attempt on North Peak (Changtse, 24,450 ft), getting very close to the summit, but abandoned the climb due to the unstable snow conditions (first ascent was in 1982). Shipton made a note that below ~23,000 ft, the snow that had fallen during the monsoon would settle, but above that line it was "a bottomless morass of soft snow." It was also during this period that they explored the upper West Rongbuk Glacier. They had a good look at the Western Cwn on the southwest and found that it was not possible to downclimb the Lho La into the Khumbu district of Nepal. Meanwhile, Spender had diligently been conducting the survey as best as he could. After they had exploited the immediate area around Everest, they moved east and climbed at will in the Kharta district.

Was this small expedition able to accomplish MEC's objectives? Spender did improve the map, and they found that the upper mountain was totally unsafe during the monsoon. They also found that there was no connection to the Khumbu district in Nepal via the Lho La. Tilman and Wigram, while on the upper Rongbuk Glacier, had a good look at the lower section of the Northwest Ridge. They ruled it out as a viable route up the mountain. The new men had been tested and tested again on the secondary peaks; several had difficulty with the altitude, but it did not stop them in participating. When it came to food, Shipton purposefully supplied the expedition with limited canned foods, as opposed to the 1933 expedition, which had a very high percentage of canned foods, which few members appreciated after the first several weeks. This time, the leader substituted fresh foods like eggs, grains, and meat when possible. Of course, it was not always practical to secure fresh items, but with a large Tibetan staff and locals coming and going, some form of trade could generally be arranged.

In retrospect, this reconnaissance certainly had the appearance of a 'working' climbing holiday, of which Shipton would no doubt be the first one to admit that is exactly what it was. Recall that one of Shipton's own objectives was that a small-budget expedition could accomplish as much as a large one, so did this get fulfilled? At first appearance, it would seem that it failed, because the expedition never got much higher than the North Col. This was due to the fact of the very unstable snow conditions they encountered above ~23,000 ft. A closer inspection shows that it pretty much checked off all of MEC's objectives. Keeping in mind that they were in the field for over three months during the peak of the

monsoon and still managed to climb twenty-six mountains, all over 20,000 ft; twenty-four of which were first ascents. All of this was accomplished on a budget that was a fraction of those of the large expeditions. The key was selecting men who wanted to climb and did not require a lot of creature comforts. Another cost-saving issue was leaving supplemental oxygen behind; not only did it cost a lot of money to transport to the mountain, it chewed up manpower because they units were constantly malfunctioning and hence in need of everlasting repair.

Despite the hard living already that summer, Shipton would have loved to continue to explore southern Tibet or knock off some climbs in Sikkim; but as leader of the reconnaissance, he had to get back to England so he could help organize the 1936 effort.

1936: A Great Start but a Dismal Finish

This was another large expedition; there were nine old hands and three new ones. Hugh Ruttledge was once again the overall leader. The headliners were Smythe and Shipton, who despite their strong aversion to these big productions, could not resist the draw of Everest yet again. Shipton's biographer, Peter Steele, noted that since Eric did not have a profession to fall back on when he was not climbing, it was difficult for him to turn down what was essentially a free trip, especially to Everest. For Smythe, who is considered the first professional mountaineer, that is in the sense that he was able to make a living from mountaineering by publishing photos and narratives about his adventures (he was also the mountain correspondent for *The Times*), and this is what he did. For both men, the distain for large-scale expeditions operating along military lines, at least in the case of Everest, was overridden by the possibility that they might be able to reach the summit. The notoriety which would follow anyone who reached the summit was not the main draw for these two climbers, but the satisfaction of a job well done.

Yet another new oxygen apparatus had been commissioned by the MEC and was to be used on the climb. The expedition arrived at basecamp on April 26; there were strong northwest winds aloft, with the result that there was little snow residing on the upper mountain. Camps were established in rapid order; Camp IV on the North Col was erected on May 15 with a large contingency of porters in support. All this good fortune came to a halt during the third week of May; the mountain was blasted by a strong monsoon storm. The weather remained foul for days. On one of the forays back to the North Col, Shipton triggered a slab avalanche just below the col; he emerged uninjured, but it was obvious to

everyone that climbing was very unsafe. Suitable conditions never did return; by early June the climbers were evacuating their camps. The expedition began its return trek on June 17.

There were two noteworthy post-expedition suggestions, the first one provided by Smythe; he advocated a route up the West Face of the North Col, although he had not set foot on these slopes. He reasoned that the nearly constant west winds would limit the amount of snow that could reside there and hence greatly reduce the risk of slab avalanches. The second proposal was put forward by Warren, who oversaw the supplemental oxygen. He advocated that future expeditions test a rebreathing type unit, as it was more efficient on bottled oxygen, which would be beneficial because it would reduce the number of bottles needed to be transported to the mountain. In addition, the unit delivered 'air' that was warmer and at a higher relative humidity. These were important considerations as this would in turn reduce the discomfort of a climber breathing very cold and dry air, which irritates the throat to no end. The drawback with rebreathers of course, both then and now, is the fact that the user has to wear a full-face mask and the filters have to be periodically cleaned; in addition, they tended to weigh about 5 lbs more than the standard open-circuit units.

It was noted above that Frank Smythe was the correspondent for *The Times*. This raises the question: how did the newspaper get timely information prior to the age of portable radios, cell phones, satellite links? The correspondent would type a report on their portable typewriter; the report was then sent via a courier, hired by the expedition for this purpose. The courier would ride, run, and hike to Gangtok, Sikkim. At this juncture, the report was transferred into the Indian mail service and forwarded to Calcutta. From Calcutta, it would be telegraphed to London. The process might take several weeks but was considered timely given the remote location of Mt. Everest. The system did not always work as intended. For example, in the July 9, 1936 edition of *The Times* (p.13), Smythe, who of course was then on the north side of Everest, reported that over 1,000 pieces of mail sent from expedition members to Britain had recently been stolen in route to Calcutta. One question: why were the members of the expedition generating so much mail?

1938: Disappointment Yet Again

This expedition, due to budget constraints, was also a modest affair when compared to its equivalents in the likes of 1924, 1933, and 1936. It did, however, take supplemental oxygen, which several climbers used while high on the mountain; but overall, it cost a quarter of some of the earlier expeditions. The

climbing team was strong: Tilman the leader, Shipton and Smythe were returning, as was Odell. Peter Lloyd, Charles Warren, and Peter Oliver were the new blood. Forty-five Sherpas from Solu Khumbu were also recruited.

The party reached the Rongbuk Glacier on April 6, a new earliest start date despite the deep snow they had to trudge through to get into the Rongbuk Valley from the north. In addition, the men were not well—various aliments had inflicted them during the trek. This early in the season, nighttime temperatures ranged from -10^{o} F down to -20^{o} F, which tended to make for long nights with slow starts in the morning. To add to the misery, early May ushered in a period of heavy snowfall. The net result was a slow start to the climbing program. Conditions were so adverse that the expedition moved eastwards over to the Kharta and Arun valleys for several weeks in order to await an improvement in the weather.

Back on Everest, Camp IV on the North Col was not established until the end of May, over six weeks after the expedition arrived at basecamp. On the positive side, they were able to establish Camp VI at 27,200 ft despite the deep snow. From high on the mountain, Tilman was able to get a good look at the North Ridge; with his considerable expertise in mountaineering, he did not think that the Second Step was climbable. Smythe and Shipton were next in line for a summit bid. They climbed for several hours in soft unconsolidated snow, angling up towards the Northeast Ridge; their upward progress across the rock slabs was almost nonexistent. They knew that the game was up once again. Tilman and Lloyd made another attempt shortly thereafter but were not able to get any higher than Smythe and Shipton.

One of the accomplishments of this expedition was that it traveled up the Rongbuk Glacier and climbed to the North Col from the West, as Smythe had proposed two years earlier. They found these western slopes heavily loaded with snow despite the nearly constant strong winds which raked them. They judged the route no better than the standard affair via the East Rongbuk Glacier.

In his summation, Tilman did note that this smaller expedition, with seven Europeans instead of the typical twelve to thirteen, got as high on the mountain as any other expedition, at a fraction of the cost. Also, even though they took oxygen (at MEC's request), he suggested that future expeditions dispense with it; once the mountain is climbed with supplemental oxygen, he said that it would have to be immediately attempted without it. He also reiterated, as others had previously, that the upper 2,000

ft of Everest could be climbed during periods of ideal weather. Specifically, not only do the winds have to be light, but wherever snow resides on the rocks, it must be consolidated.

After the 1938 expedition, the British versus Mt. Everest scorecard was dismal. There had been seven expeditions, two of which were labeled as 'reconnaissance'; nevertheless, only the first, 1921, was not prepared to attempt the summit. A lot of money had been spent on expeditions and a number of lives lost. On the positive side, on four occasion climbers had reached or nearly reached the 28,000 ft level. There must have been a lot of head scratching at 74 South Audley Street, London, the Alpine Club's headquarters around this time; what was it going to take to reach the summit? The expeditions in the 1930s all experienced poor weather; once the weather improved, it often took a number of days for the snow to settle, but by then the next disturbance was impacting the mountain. Fortunately for the Brits, they had a monopoly on the mountain; it is unlikely that any other national expedition would have reached the summit, but had others had the opportunity, it would have certainly increased the frustration and stress reverberating in the halls of the Alpine Club.

It is noteworthy that in 1938, Shipton was awarded the RGS Patron's Medal, the citation reading, "For his most distinguished record of mountain climbing." It must have been bittersweet to Eric; he was the recipient of a very prestigious award, however, after the 1938 effort, Everest must have seemed unobtainable. He had participated in four Mt. Everest expeditions and yet the summit was as far off as ever.

In Chapter 11 of *Upon That Mountain*, where he has just summarized the 1938 expedition, Shipton suggested that permission be obtained from the Tibetan Government for the British to be able to attempt Everest for five consecutive years. These would-be small expeditions, built around a core of four seasoned climbers, would make their attempts in the pre-monsoon season. The odds were that at some point the weather and snow conditions would be favorable for the mountain to be climbed. These expeditions would also have a scientific agenda, primarily physiological research. He recommended that expedition gear be stowed in the vicinity of the Rongbuk Monastery after the first season, reducing transport costs for the follow-up expeditions. This of course assumed enterprising Tibetans would not abscond with the gear in the meantime. This enterprising initiative was never enacted, in part because of the cataclysmic events that were about to unfold in Europe on September 1, 1939: the commencement of World War II. Had World War II not occurred, rest assured that the British would have sent a number of additional expeditions to Everest in the early 1940s—maybe not five in a row, but a significant number nevertheless.

Chapter 29

Himalayan Kingdom of Nepal

At this point, it is worth a break in the Everest narrative to consider the history of the Kingdom of Nepal, as it now becomes central to the story of Himalayan exploration and Mt. Everest in particular. Several surveyors from the Survey of India had over the previous decades been asked by the Government of Nepal to conduct some specific surveys, but those were short-term events. Hence even as late as 1950, Western cartographers were still in the dark regarding the intimate details of Nepal's amazing landscape. Yes, the larger peaks were known, but the twists and turns of the intervening valleys let along the smaller peaks, were *terra incognita*.

Nepal was until the second half of the 20th century ruled solely by a king and his royal family. The country's policy of isolation dates back at least several centuries; as we have seen throughout this narrative, the government generally made an attempt to restrict the intrusions of Europeans. Although several Jesuit missionaries may have traveled through Nepal in the 17th century, after the conclusion of the Anglo-Nepalese War (1816) the borders were closed with only a few exceptions. This remained the official policy until 1949.

There were exceptions, of course; some Westerners entered Nepal legally while others did not bother with formalities. In 1848, the botanist J. Hooker—as already described in this text—spent two and half months wandering throughout eastern Nepal (Arun Basin) with permission from Katmandu. The pundit Hari Ram visited Nepal in 1873—clandestinely, of course, he traveled in west-central Nepal, to the west of the Khali Gandaki Basin; eventually he made his way through Mustang and then into Tibet.

The king also allowed British diplomats to reside in the capital but they were not allowed to leave the Katmandu Valley except if they were in transit to India. Of course, there had been several expeditions which we have discussed that did not have permission, but which crossed into Nepalese territory nevertheless.

A couple of expeditions that were granted permission to climb in Nepal were the 1929 German and 1930 international expedition, both headed for Kangchenjunga. Why the about-face by the authorities in Katmandu is unknown, but it could have possibly stemmed from the fact that both expeditions would be entering and exiting the country from Sikkim, and they would be venturing in a remote area, so what would be the harm?! It is also possible that Katmandu wanted to improve its

global image. In any case, the 1929 German Kangchenjunga expedition made its attempt from the east (Zemu Glacier) because Nepalese permission came too late for them to redirect their efforts. The 1930 international expedition led by Dr. Dyhrenfurth made full use of its permit, trekking into Nepal via the Kang La and then up the valley of the Kangbacken to the Kangchenjunga Glacier. After their failed attempt, the party trekked north and exited Nepal via the Jongsang La.

In 1931 and again in 1932, a Captain Morris, of the Survey of India, was allowed to enter Nepal for the purpose of taking some photographs of the Greater Himalaya. He managed to crest the foothills south of Pokhara and obtain some panoramic images of Dhaulagiri and the southern Annapurnas. In 1934, the geologist J. Auden, who would later join Shipton's 1937 Karakoram expedition, was asked to come and conduct a survey after a severe earthquake rocked southeastern Nepal and the adjoining Bihar. Essentially, however, the situation as it stood in the late 1930s was that the outside world had only a limited knowledge of Nepal, not only in terms of its geography, but also of its peoples and their cultures.

In the immediate aftermath of World War II, expeditions were of course slow to return to the Karakoram-Himalaya due to the economic state of much of the world. With regards to Nepal, the big change occurred in 1949 when the king began to grant permission to foreign expeditions, whether for the purpose of exploration, science, or mountaineering. A small Swiss contingent took advantage of the new policy and were granted permission to climb Kangchenjunga. They ended climbing a number of peaks around Kangchenjunga and reconnoitered the big peak itself but did not make a serious summit push. They produced a map and conducted some physiological tests as well. That same summer, Harold Tilman led a small British party into the Langtang Region of Nepal; this excursion was sanctioned by the Himalayan Committee, and hence Tilman was 'forced' to include several scientists on the roster.

It was most fortunate for climbers and mountain explorers that Nepal opened its doors to the world when it did. At the same time, the doors to Tibet, which had never been totally open, except to the British, closed suddenly and as it turned out stayed closed for many decades. The Chinese Army invaded Tibet at the behest of the communist leaders ruling from Beijing. Many prominent Tibetans fled their country, including the XIV Dali Lama. The fact that Nepal was opening and Tibet closing their respective frontiers to foreigners was not a coincidence. Nepal began to welcome the rest of the world in response to the encroachment of the Chinese into Tibet. In essence, Nepal was seeking 'protection' of its own sovereignty by allowing Western countries access to its much sought-after mountains.

In the spring of 1950, Tilman was back in Nepal; this time he ventured around the Annapurna Himal before accepting an autumn invitation from Oscar Houston to accompany his small party to the south side of Mt. Everest. Before heading to Everest, Tilman, and party—which consisted of four Brits, one Kiwi, and several Sherpas—made a solid effort on Annapurna IV (24,688 ft); they reached 23,800 ft before the weather and snow conditions forced a retreat.

Meanwhile, a French expedition, led by Maurice Herzog, was slowly making its way up Annapurna I (26,558 ft). The French had received permission from the Nepal Government to explore and climb on either side of the Kali Gandaki Valley. Initially, they reconnoitered Dhaulagiri from the east and northeast, but gave up any thoughts of a serious attempt due to the broken-up nature of its glaciers and its extremely steep faces. Hence, they redirected their attention to the east side of the valley, the great Annapurna Himal. It took several additional weeks of reconnaissance to find a route to the base of Annapurna I. The summit was reached in due course; the epic retreat and aftermath is vividly captured in Herzog's classic *Annapurna*. This was the first of the large mountaineering expeditions allowed into Nepal after 1949 and it was the first to summit an 8,000 m peak (26,247 ft). The closed-door policy of Nepal was now cracked open, and by the mid-1950s it would be wide open to all.

The 1950 Houston Reconnaissance

The story of Mt. Everest resumes with the 1950 reconnaissance led by Dr. Charles Houston, an American medical doctor who was an expert on high-altitude physiology. He had climbed in Alaska and taken part in the 1936 Nanda Devi expedition (of which Tilman had summited). He also led the 1938 American reconnaissance of K2. Most of the expeditions he participated in or led were financed by his lawyer father, Oscar. This small party consisted of Charles Houston; Oscar Houston—who loved to trek but did not climb—and Elizabeth Cowles, an American climber; as well as Anderson Bakewell, who was studying at a Catholic seminary near Darjeeling; and of course, Tilman.

The younger Houston and Tilman had prior commitments in their respective countries beginning in mid-December, so this mini-expedition was under a serious time constraint because the Houston's would not be able to commence the trek until late October. This left little or no time for delays (weather, transport) and potentially little time to explore the southern approach to Everest. The team met in the town of Birat Nagar located on the southern Nepal border, just within West Bengal; they were due south of Everest. The party spent two weeks trekking to the base of the mountain. The trek

was plagued by porter strikes; nevertheless, by mid-November they were being entertained in Thyangboche by the lamas of the monastery. This started the tradition that expeditions visit the monastery to be blessed by the abbot and in turn provide a monetary gift.

Charles and Tilman made a quick reconnaissance up to the Khumbu Glacier. They camped on the eastern margin of the glacier and then ventured far enough up the ice to garner a partial look into the Western Cwm. The next morning, they climbed a 18,000 ft promontory on the west side of the Khumbu Glacier but they could only see the upper section of Everest's summit. What they saw, they did not particularly like, at least from a climber's perspective. In the end, they never did obtain an unobstructed view up the Western Cwn, which would have revealed the true nature of the route; in other words, they never laid eyes on the South Col or the slope leading up to it. With time running out, they had to curtail their explorations, which is unfortunate as they were not able to provide a definitive answer on the feasibility of climbing the mountain from this approach. This of course meant that an additional reconnaissance was needed before anyone was going to finance a major attempt from Nepal.

1951: The British Nepal Reconnaissance

The Joint Himalayan Committee (JHC), which had emerged from the older Mt. Everest Committee, had asked the Government of Nepal permission for a Mt. Everest reconnaissance back in 1949. The Government of Nepal responded in the negative with regards to Mt. Everest but offered the Langtang Region as an alternative. This, as we have already noted, is why Tilman led a small expedition to this region. The authorities in Katmandu, however, did grant permission for an Everest attempt for the autumn of 1951; therefore, a modest expedition was assembled. Although the JHC had asked for permission, the expedition was organized by prominent climbers within the Alpine Club, as it turns out, with minimal oversight from the JHC. The members consisted of Michael Ward, Tom Bourdillon, William Murray, and Eric Shipton; the latter was asked by the other members to be its leader. Both Murray and Shipton wrote accounts of their adventures; the former wrote a summary in *The Alpine Journal*, Vol.58 and the latter a short book entitled *Everest 1951*.

Shipton had recently moved back to England from China, where he had been the Consular-General in Kunming. Prior to that posting (during World War II), he had served as the Consulate-General in Kashgar. With the Chinese Communist Army moving southward in late 1950, it was time to close the Kunming consulate. Shipton, by this time, had been married almost ten years and had two children.

Even though he had done little climbing in recent years, or even little trekking, he was the overwhelming choice to be leader of this new attempt on Everest. He had managed to do a bit of mountaineering in 1947 (including an attempt on Mustagh Ata with Tilman) and again in 1948 in the Tien Shen, but nothing in the last three years.

Once this foursome had arrived in Nepal, two New Zealanders, Earle Riddiford and Edmund Hillary, who had been in the Garhwal Himalaya for some time on a separate climbing program, joined the expedition. Word had gone out in the spring of 1951 that the JHC was sponsoring a reconnaissance to the south side of Everest. Not being bashful, the New Zealand Alpine Club cabled Shipton asking if some of their members could join. Shipton was reluctant at first, not so much because he wanted to keep it an all-British affair, but because the JHC had seemed reluctant to allow others to join. On the outward journey to Nepal, Shipton thought it over and decided to extend an invitation for two Kiwis. The two additions were warmly received by the team and turned out to be a significant asset to the reconnaissance and beyond. It was not uncommon for the Kiwis—who were climbing in the Karakoram-Himalaya region—to join forces with mountaineers from other nations.

This expedition began its northward trek on the Nepal-Bengal border; however, unlike the 1950 Houston reconnaissance, which commenced here as well, it began during the height of the monsoon. As to be expected, they were plagued by rain and leeches; they also had some serious issues with porters. However, by late September they arrived in Solu Khumbu; not only did they celebrate their arrival at the foot of Everest, but they could also celebrate the termination of the monsoon rains.

On September 29, they established their basecamp (~18,000 ft) at the foot of Pumori (23,493 ft, first ascent in 1962 by a German-Swiss expedition). Their first impression of the Khumbu icefall was not very positive; as Murray noted, “It looked more crevasse-riven than even photographs had suggested, and it was obviously threatened by avalanches from the West Ridge of Everest.” From the slopes of Pumori, Shipton and Hillary were able to view the South Col and the slopes leading up to it from the Western Cwm for the first time. Unlike the icefall, they viewed the route with considerable favor.

Eager to come to terms with the route, they began to climb right away. By early October, the team had managed to climb most of the way through the icefall despite its menacing seracs and deep crevasses. However, at this point in time the expedition members decided jointly to disengage from the route in order to further acclimatize and allow the monsoon snows to consolidate. Another objective of this expedition was to explore as much as the region as they could manage.

In order to fulfil this new initiative, they broke up into two parties. Shipton and Hillary traveled up the Imja Khola (due south of Everest) in hopes of finding a route that would allow them to access the Kangshung Glacier on the east side of Everest. They moved east and then southeast, reaching the Hongu Glacier and then forcing their way over another high pass to the lower Barun Glacier. By the time they reached this point, they realized that they were a good 12 miles south of the high ridge that divides the Barun Glacier from the Kangshung Glacier; in other words, they were far from their intended objective. Since they were running low on supplies and their allotted time for exploration had elapsed, they headed back towards basecamp.

Meanwhile, Ward, Riddiford, Bourdillon, and Murray traveled westwards up the Changri Nup Glacier, crossing a pass which led to the Gyubanare Glacier and eventually to the Ngozumpa Glacier. They eyed the east face of Cho Oyu but could not find any routes that looked climbable.

They also had aspirations of reaching the Nup La, the pass which connects the upper Dudh Kosi Basin of Nepal with the West Rongbuk Glacier, in Tibet. Recall that the 1924 expedition had looked down from the Nup La into Nepal, but no Westerner had crossed it. From what information the current expedition had been able to gather, it would probably be an easy excursion. However, Ward and Bourdillon, who had ventured up to take a closer look at the pass, reported that it was protected by a formidable icefall. Nevertheless, the party decided to throw its collective climbing skills at this feature. They spent a good part of a day climbing through the torturous ice only to find that by 2 p.m. they were less than halfway to the pass. Time had run out; they had to get back to the Khumbu and resume the Everest reconnaissance.

By October 25, the entire team had reassembled in basecamp on the edge of the Khumbu Glacier. As the lead climbers ascended the icefall, they noticed very significant changes in the configuration of the ice from one day to the next; large, towering seracs were falling over with considerable frequency. This not only spread debris all over the route, but often new crevasses would open up as well. Murray referred to them as ‘chasms’ because to call them crevasses did not do them justice. He stated that the area would often resemble the aftermath of a major earthquake. This was of course a foretaste of the many dire situations that future expeditions would encounter within the Khumbu Icefall.

With steady determination, the expedition was able to thread its way through the upper icefall—reaching the flatter sections of the middle Khumbu by late October. Just above the icefall, they

came across the largest crevasse that any of them had ever laid eyes on in their respective climbing careers; true to form, it stretched across their proposed route. This monster was 100–300 ft wide and a solid 100 ft deep with vertical walls. There was no route across on the right but they did eye a "snow-corridor" on the left; however, it was composed of material that had avalanched from the adjacent slope and to access it they would have to backtrack some distance. The team initially had hoped to establish a camp above the icefall from which they could continue their explorations, but the difficulty involved in crossing this monstrous crevasse and the lateness of the season was a good indication that the exploratory part of the expedition was drawing to a close.

From what they had seen of the route lying between the top of the icefall and the South Col, they thought that it would not offer any unsurmountable difficulties. They were optimistic that the massive crevasse they had just encountered would be partially filled with snow or would be sufficiently changed (for the better) in future years, that it would not thwart any summit attempt. They also suggested that the autumn was the best time for an attempt; much of the upper slopes were bare of snow as strong northwest winds were beginning to be reestablished.

Murray noted that the Southeast Ridge was broad and from what the expedition could view of its upper section, it might offer several lines to the summit. Murry also had access to aerial photos which did indicate, however, that the ridge did narrow significantly for the final 300 ft to the summit. Another advantage of any potential south side route versus the Northeast Ridge is that the former, by virtue of its aspect, is in the sunshine for many more hours than any of the northern routes. This is an important point for morning starts, not only physically but psychologically as well.

Over the intervening sixty-nine years since Murray's comments regarding the weather, most successful expeditions on Everest have occurred in the pre-monsoon (May) rather than in the post-monsoon (October). This is an interesting situation, because there are generally very few days of summit-friendly weather in the pre-monsoon; there are just as many 'good' weather days if not more in the post-monsoon. It has become more of a tradition to climb Everest in May than October. Most expeditions, whether they are commercial or private, would rather arrive and climb the lower sections as air temperatures warm and before additional monsoon snow accumulates on the upper rocks. In October, air temperatures are of course falling and the upper mountain may or may not maintain its mantle of monsoon snow, making the rock sections even more hazardous. However, there are generally few storms in the autumn; the key is getting to the top prior to the re-establishment of the strong upper-level Jetstream winds which are prevalent from late fall through late spring.

Even though the climbers had completed their work on Everest, they still were not done with Nepal. All participants were keen on reconnoitering the area to the south of the Gauri Sankar Range via the Bhote Kosi drainage. (Note that there are two rivers in Nepal that go by the name of Bhote Kosi—this is the eastern one that branches off northwest of Namche Bazar. The other, Bhote Kosi, is part of the Sun River system and lies just west of the Rowlaling region.) The climbers broke up into three groups in order to cover as much territory as possible and to satisfy each of their own ambitions.

Shipton, Ward, and Sherpa Sen Tensing, after trekking some two-thirds up (north) the Bhote Kosi, veered to the west and proceeded up the Dingjung Glacier. The top of the glacier was on a divide that separated Nepal from Tibet. They found a pass which they named 'Menlung La' (unknown height) because they were a few miles east of Menlungste (23,571 ft, first ascent in 1993 by a Slovenian expedition). The party then downclimbed the ice, eventually reaching the Drogpa Nagsang Glacier; from here they proceeded to the south of Menlungste where they ascended an east-west ridge which forms the Nepal-Tibet border. From this vantage point, the trio were able to look down on the Rowlang Valley, some 7,000 ft below. Instead of directly descending into the Rowlang, they retraced their ascent route and then proceeded westwards and ultimately northwest along the Menlung Chu (river); this route took them north of the twin summits of Gauri Sankar (23,420 ft, first ascent 1979).

It was while they were on one of the glaciers (unnamed) south of Menlungste that they came across a set of large tracks in the snow. The tracks were about 12 in. long and distinct impressions made from pads could be seen. They followed the tracks for about a mile before the tracks disappeared in the rocks. Shipton wrote in Chapter 4 of *The Mountain Everest Reconnaissance Expedition 1951*, "I have in the past found many sets of these curious footprints and have tried to follow them, but have always lost them on the moraine or rocks at the side of the glacier." Their Sherpa insisted that they were the tracks of a Yeti also known local as a 'wild man.' The party, now joined by Bourdillon and Murray, followed the Rongshar Chu southward and eventually entered the western end of the Rowlang Valley and then on to Katmandu.

Meanwhile, as Shipton's party was wandering in southern Tibet without permission, Bourdillon and Murray had traversed the Nangpa La (18,835 ft), a pass located 4 miles due west of Cho Oyu and at the very northern head of the Bhote Kosi. Their route took them up the Lunag and then Nangpa glaciers. The pass itself was a wide snowfield surrounded by "splendid snow-peaks." This pass was a well-used track by merchants on the Nepal-Tibet trade route (salt, wool, borax, tea). The climbers were able to eye the upper part of the Northwest Face and North Ridge of Cho Oyu (26,905 ft, first ascent in 1954 by an

Austrian expedition). They immediately concluded that both features were easily climbable. However, as it turned out, they were not able to view the lower slopes leading up to the Northwest Face, which are protected by a series of menacing ice-cliffs that are not easy to climb or circumvent.

Bourdillon and Murray retraced their steps down the Nangpa Glacier and then headed west over the Menlung La, following the route pioneered by Shipton, Ward, and Tensing a few days before. They trekked down the Melung Valley and were able to meet up with Shipton's party, which as we have seen were exploring the area in some depth. The two parties then joined forces and exited via the Rongshar Chu as noted above.

The third party consisted of Hillary and Riddiford, who at this juncture were joined by a geologist, a Mr. Dutt, who had been working in Nepal throughout the summer. They ventured up the Thame Kola Valley which branches off from the western side of the Bhote Kosi. They had a difficult climb up a pass they called the 'Tesi Lapcha' (unknown height, possibly the Trashi Labsta, 18,956 ft), and their ice axes and crampons saw plenty of use. Once they were on the west side of the pass, they were able to then descend into the upper Rowland Valley, eventually trekking westwards to the confluence with the Bhote Kosi (the western one) and then southward to Katmandu.

The 1951 British Mt. Everest reconnaissance had been highly successful; they had been able to climb the Khumbu Icefall and obtain a good look at potential routes on the upper mountain. They now had a good idea what resources would be needed to make a serious attempt for the top. In addition, although they did not conduct any surveying, they did get acquainted with a considerable portion of the terrain in the Khumbu district during their multiple forays.

Chapter 30

Everest: At Last!

1952: The Swiss Almost Pull It Off

The Swiss were granted permission for Everest for the 1952 season; this of course did not please the British, who had come to view Mt. Everest as their exclusive Alpine venue. Nine Swiss climbers led by Edouard Wyss-Durrant departed Katmandu on March 29 with 165 porters, twelve Sherpas, and about 4 tons of baggage. This was the first large expedition to commence operations from Katmandu. The trek to the Solu Khumbu was made without difficulties.

They established their basecamp on April 23 and went to work on the Khumbu Icefall. They made good progress through the icefall and Western Cwm (Cwm is Welsh for 'basin'). At one point, they constructed a rope bridge across a 20–25-ft-wide crevasse that barred the way into the Western Cwn, but did not have to contend with the monster crevasse that the 1951 reconnaissance had mentioned. There were frequent avalanches down the face of Nuptse but these never endangered the expedition. Upward momentum slowed down considerably between the top of the Cwm and the South Col; however, persistence won the day as they were able to establish a camp on the South Col (~26,300 ft) on May 26.

Strong winds on the upper mountain made life miserable in the higher camps; nevertheless, they pushed beyond the South Col. Raymond Lambert and Sherpa Tenzing were able to set up a camp on the Southeast Ridge with Leon Flory and Rene Aubert in support. The two climbers spent a miserable night in their tent, in large part due to the fact that they did not have any sleeping bags or sleeping mats. They passed the time attempting to keep warm; they slapped each other and kept moving their limbs. In the morning, they melted a little snow to drink with the aid of a candle as they had no stove. Even though the two climbers were not able to sleep the previous night or eat breakfast, they decided to push on up the ridge.

They struggled upwards against the wind; clouds enveloped the upper mountain but occasional breaks gave them a glimpse of the summit ridge. They were carrying supplemental oxygen but were only using it when they stopped to rest. They made it as high as 28,215 ft (just below the South Summit)

before turning around. This was the only summit attempt by the Swiss on this, the first of their two Everest expeditions.

Wyss-Durrant made several suggestions in his short summary of the expedition which appeared in *The Geographical Journal*, Vol.119, 1953; first, subsequent expeditions should consider establishing additional camps on the Nuptse Face; this had the positive result of reducing the distance between camps, although would require additional gear and load carrying by the porters. Second, a rock outcrop at 8,400 m (27,572 ft) on the Southeast Ridge would be the ideal location for the highest camp.

One glaring problem with this expedition was the lack of supplies (stove, sleeping bags, and mats) in their high camp. It seems there was a breakdown in the supply chain. The climbers and Sherpas could not carry enough supplies to the South Col and above to sustain a party in some resemblance of comfort at the col. You cannot expect climbers to function properly without proper rest—one poor night maybe, but not two or more, as in the case of Lambert and Tenzing. In fact, Tenzing was the only Sherpa to go higher than the South Col. Most of the Sherpas that made it to the col were in poor shape and turned around immediately for a lower camp. Times have of course changed since then; nowadays high-altitude Sherpas outperform most (but not all) Western climbers by a considerable margin.

The Swiss mounted another attempt in the autumn. They managed to get through the icefall with no difficulties and they were able to work their way up to the South Col. After this initial success, the weather shut down operations; it was too cold and too windy to continue. Unfortunately, one of the porters was killed on the steep wall comprising the lower section of the Lhotse Face.

Prior to the Swiss attempts, Shipton had gone to Switzerland and met with the Alpine Club. He discussed what the 1951 reconnaissance expedition had seen and shared their photographs. It was now the turn of the Swiss with their experience high on the Nuptse Face and Southeast Ridge, to share with the 1953 British Mt. Everest expedition what they had learned and what mistakes to avoid.

1953: Finally, Success!

The British received permission from the powers that be in Katmandu for an attempt on Everest during 1953. In those days, a permit was issued for the entire year, so like the Swiss the previous year, they had *carte blanche* on the mountain. The Joint Himalayan Committee was the permit holder. (One wonders if the Brits would have made the effort had the Swiss reached the top the previous year?) The committee

selected ex-Army officer John Hunt to be the leader of its newest effort. Shipton had appeared to be inline as the leader of this massive expedition because he led the 1951 reconnaissance expedition and the 1952 Cho Oyu expedition. The latter was a warm-up for the Everest attempt. In the end, an anti-Shipton faction within the JHC held the majority, so Shipton was out and Hunt was in.

Hunt had served in India and Burma during the 1930s, during which he had a chance to roam through parts of the Himalaya and Karakoram. During World War II, he taught mountain warfare and then fought in Italy, and at the end of the war went to Greece in an attempt to restore peace and order. He was a solid mountaineer; his biggest climb occurred in 1935 with an attempt on the then unclimbed Saltaro Kangri (25,400 ft, Peak 36, see Chapter 19), located astride the Siachen Glacier. He reached the vicinity of 24,000 ft but then had to wait out a three-day blizzard, after which the party terminated its summit bid. Hunt was under consideration as a climbing member for the 1936 British Everest expedition, but the doctors ruled that because of a heart murmur, he should be disqualified. (*The Telegraph*, Obituary, Nov. 9, 1998)

The 1953 expedition was run along military lines, which was no surprise given Hunt's background. In addition, such a large effort had to be highly organized if it was going to have a chance. Prominent expedition members were C. Evans, a doctor who had been on a number of recent expeditions with Shipton, as had Bourdillon. Two members were from New Zealand— Hillary and George Lowe—both of which had of course also been with Shipton in recent years, recall that Hillary had been on the 1951 reconnaissance.

The expedition congregated in Katmandu. It was such a large group—thirteen Westerners, and 7 ½ tons of gear—that the trek to the mountain was broken up into two parties. By March 10, the first contingent of 150 porters and an assortment of climbers departed, while 200 porters and the remaining climbers left the following day. The entire expedition assembled in the village of Thyangboche, where the climbers and prominent Sherpas (at one point there were thirty-eight Sherpas on the payroll) spent several weeks conducting tests on the various oxygen apparatus and making short acclimatization forays, a process that Hunt called 'rehearsals.'

This expedition had from its inception in the fall of 1952 planned on using supplemental oxygen. Various units had been reworked and tested on the Cho Oyu expedition. One would think that after all the years of experimentation, that a reliable unit would already exist; it seemed as if they were always reinventing the wheel. They ended up taking three different units: a traditional open-circuit unit,

another that was designed to be used while climbers were sleeping (smaller face mask but essentially an open-circuit unit), and finally a closed-circuit unit (rebreather). The latter had of course been recommended by Warren after the 1936 expedition. Although discussed in earlier chapters, let us review the merits and demerits of the closed-circuit units. This unit offered two advantages: first, it used less of the bottled oxygen because some of the air exhaled by the user contained oxygen, which was then reused. Second, it provided air that was pre-warmed with respect to ambient air temperatures and contained higher water vapor content. Warm moist air reduced the occurrence of a dry or sore throat. The two disadvantages were: first, that the filters had to be cleaned or changed from time to time, and second, its weight, on the order of 35 lbs. The weight of an open-circuit unit varied depending on how many bottles of gas were carried, but typically varied from 25–30 lbs. On the face of it, one might think that the open-circuit units, due to their lower weight, would be an easy choice; however, they require many more bottles of oxygen than the closed-circuit units. All of those bottles had to be transported from England in those days, not a trivial cost. Then they had to be manhandled to the base of the mountain and then up the mountain, which fell to the porters and then the Sherpas.

Basecamp along the Khumbu Glacier was established on April 15, while work on the icefall was already in progress. The route through the icefall was much as the Swiss had found it the previous spring as well as the 1951 reconnaissance expedition: convoluted. Some of the larger crevasses were bridged with sections of aluminum ladder that had been carried from Katmandu in 6-ft sections. In addition, a small forest of pine trees had fallen to the axe and were hauled up from lower elevations and used in the construction of ‘bridges.’ This expedition established a temporary camp in the icefall in order to break up the journey for the heavily laden porters. In fact, they established a string of nine camps along the route. This included two camps on the Lhotse Face. In order to avoid the steep slope up to the South Col and the Geneva Spur, the route was pushed up the Lhotse Face (glacier), which was not as steep and locations for the camps could be found. However, it required a long traverse over to South Col.

During the trek and acclimatization period, the weather had been exceptionally good, generally sunny with little in the way of precipitation. However, from mid-April onwards, there was a considerable amount of fresh snow that made route finding and the subsequent build-up of supplies that much slower. There were days where climbing could only be characterized as a slog.

From the early days of planning, it had been proposed that the two assault teams should be in place high on the mountain, ready for their summit bids no later than May 15. This date was selected based on years of data; it coincided with the conclusion of the spring storms but before the onset of the

summer monsoon. What this means is that there is generally a window of opportunity in late May, which is free of storms and during which the upper-level winds blow with less intensity. If the first two assault teams failed to reach the summit, the climbers would evacuate the mountain to basecamp, regroup and resupply, and try again when the weather allowed. Meanwhile, not wanting to leave any stone unturned, there was a separate team of climbers in England that were making preparations for an autumn attempt, contingent on the success/failure of the current expedition.

As was to be expected, the best laid plans had to be altered. The climb up the Lhotse Face took a lot longer than anyone could have anticipated. The cold air temperatures and strong winds were taking their toll, as was the circuitous route. The South Col was finally reached on May 21; however, it then took a number of additional days to build up enough supplies so another camp could be established on the Southeast Ridge. Meanwhile, the weather had settled down again; overall, it was quite favorable for a summit bid—strong winds raked the upper mountain from time to time, but that was the worst of it.

Five days after the South Col had been reached, the stage was set for what Hunt in his narrative calls “the first assault.” This consisted of two parties; Evans and Bourdillon would attempt to reach the South Summit (28,704 ft), while Hunt and Da Namgyal would carry some of the gear needed to established Camp IX, to be sited somewhere along the Southeast Ridge. It was windy that day but otherwise the weather was good. Hunt and Da Namgyal made it up to 27,350 ft and dumped their loads; they were a short distance above where the Swiss the year before had established their ultimate camp. Evans and Bourdillon, who had a strong start, crested the South Summit at 1 p.m. They had a good look at the route up the last stretch to the top. They never seriously considered their own summit attempt, as they were having some trouble with their oxygen units (closed circuits); in addition, they were starting to feel fatigued. Meanwhile that same day, Hillary, Tenzing, Gregory, Lowe, and a host of Sherpas reached the South Col.

Two days later, May 28, the Second Assault Team commenced its push to the summit. Hillary and Tenzing were of course designated as the summit pair, while Gregory, Lowe, and Ang Nyima were in support; mainly to carry additional gear up to Camp IX as well as several bottles of oxygen. The ascent up the ridge to where they camped was straightforward. Hillary and Tenzing set up their little camp at ~27,900 ft on a small flat spot just off the ridge. The three support climbers descended to the Col, where they camped for a second night.

An inventory that afternoon at Camp IX showed that the two climbers would only have one and two-thirds of a bottled oxygen to work with on the following day. This meant that they would have to reduce the flow rate from 4 liters per minute down to 3. However, there was some comfort knowing that the First Assault Team had left two partially filled bottles somewhere between their camp and the South Summit.

The process of getting ready on summit morning began at 4 a.m. on May 29. The weather was clear with virtually no wind. The oxygen units had to be prepped and Hillary had to thaw out his frozen boots over the stove. They pushed off at 6.30 a.m., making good time up the ridge despite the soft snow. They reached the South Summit at around 9 a.m. Looking up the final section of the ridge, Hillary would write, "At first glance it was certainly impressive and even rather frightening." Fortunately, the snow was firm; they belayed each other from time to time in 40-ft sections. There were a couple of spots where in order to avoid a cornice, they had to work out onto the South Face with its shear drop down into the Western Cwm.

The next major obstacle was a 40-ft-high rock step; the surface was exceptionally smooth, and they could not climb it directly. The problem was solved when they eyed a crack between the rock and a cornice to the east. With Tenzing on belay duty, Hillary after some gymnastics was able to maneuver his large frame between the cornice and the rock (hereafter known as the 'Hillary Step.'). Above the step, the ridge consisted of a narrow strip of snow with large cornices lining the east and steep rock slopes to the west. Even though they were wearing crampons, the two climbers typically cut steps in order to increase their margin of safety.

It had been over two hours since they had crested the South Summit and yet they continued to climb; Hillary was starting to think that the ridge was endless. He remarked … I wondered rather dully just how long we could keep it up. Our original zest had now quite gone and it was turning into a grim struggle." But then they noticed that the ridge had finally started to fall away instead of ascending. Shortly thereafter, Hillary and Tenzing stood on the summit of the world. It was 11.30 a.m. They spent about fifteen minutes on the top; Hillary took some color photos while Tenzing buried some offerings in the snow. The weather remained ideal—views as one would image were immense.

They were back on the South Summit in an hour; they were obviously making good progress. Hillary noted that they still climbed cautiously as parts of the ridge were directly above the massive Kangshung Face with its 9,000 ft drop. They reached Camp IX at 2 p.m.; Tenzing prepared a hot lemon

drink while Hillary switched out their bottles of oxygen. The plan had always been for the summit pair to drop down to the South Col after their attempt—so the climbers continued their descent that afternoon. There were places where they had to recut steps, a major bit of work considering that they had already had a long day. By now, the wind had increased, not only making it colder but also more difficult to concentrate on foot placement. Nevertheless, all went well and ultimately, they were greeted at the base of the ridge by Lowe, who supplied them with a hot drink and extra oxygen.

Overnight at the camp on the South Col, the wind blew with its usual intensity; the climbers, despite their exhaustion, could not sleep due to the intense cold and the flapping of the canvas tents in the wind. The next morning, it was a trial to get prepared for their departure, but they made the descent to Camp IV in the Western Cwm in good order, arriving late that afternoon. The serious business of evacuating the mountain with personnel and gear swung into action the following day. Once the mountain had been climbed, Hunt never entertained the thought of allowing anyone else a chance to set foot on the top.

News of the success spread quickly around the world; telegrams of congratulations poured into the Namche Bazar wireless office. On June 2, *The Times* ran the story with a bold headline proclaiming: "Everest Conquered—Hillary and Tenzing reach the summit." The article provided a brief history of previous Everest expeditions complete with publicity photos of Hillary and Tensing.

As the expedition quit the environs of the Khumbu Glacier it reached Lobuje, a small settlement where many of the expedition members had retreated from time to time in order to breathe the 'thick' air and to enjoy a change of scenery, or convalesce. Now it was time to properly celebrate the expedition's success. The 2 in. mortar which the expedition had been carting around over the past three months was unpacked for the first time. They had taken this unique bit of 'mountaineering gear' in order to shoot down avalanches in the Western Cwm, if deemed necessary—they had never used it until then. (I wonder what Shipton and Tilman thought of this extra weight? They probably had some choice words when they heard about it.) Twelve rounds, their complete complement, were fired off to the delight of onlookers.

The trek back to Katmandu occurred as the monsoon rains commenced; to the delight of no one, leeches emerged with the rains. There was a lot of celebrating in Katmandu by its inhabitants, as one of 'their own,' Tenzing, had reached the top. (He was born in Tibet, lived as a youth in Nepal, and as an adult in India. Ethnically, he was Tibetan, but his nationality was Indian.) There was also a lot of

nonsense in the press regarding which of the two men had been the first to actually set foot on the summit.

In his account of the expedition, Hunt gave a lot of credit for their success to the many climbers and expeditions that preceded his. Essentially, each successive expedition paved the ground for the next. Within his own expedition, he pointed out a number of factors which contributed to victory: detailed planning, a well-balanced team of climbers including the Sherpas, the use of supplemental oxygen, and good luck with the weather.

Of course, many of the previous expeditions had many of these same attributes, so what was the difference this time? Hunt ultimately concluded that the use of supplemental oxygen was the big difference, in addition to the weather. Once again, previous expeditions had used oxygen; they had spent a lot of time designing delivery systems, thought about how to use it, etc. There are some differences, however; 1953 used oxygen at night (above 21,000 ft), and they also primarily used closed-circuit units on the upper mountain. It is certainly possible that this was the nudge that allowed Hillary and Tenzing to reach the summit. Equally important, although one may argue that it was even more important, was the period of good climbing weather they experienced during the second half of May. It had still been windy at times, but overall, especially when compared to the expeditions of the 1930s, the weather was ideal. In the final analysis, the use of supplemental oxygen and good weather came into alignment (for further discussion see Chapter 33).

Everest Afterglow:

After nine expeditions spanning a thirty-two-year period, the British finally had a confirmed summit. There are two interesting ironies regarding the British success that are worth pointing out. First, the two summit climbers were not British—Hillary was from New Zealand and Tenzing, as noted above, was ethnically a Tibetan, having lived most of his life in Darjeeling, India. After all the great British climbers who had attempted the peak over the course of the first eight expeditions, it was two Commonwealth climbers to reach the highest point. Was this serendipity in action? An unplanned nod to the multi-national nature of the British Empire? Hillary and Tenzing had been selected as the primary summit team from the beginning of the climb. Recall that they composed the Second Assault Team, but the First Assault Team was tasked with reaching the South Summit and would only attempt the top if time and conditions allowed.

Second, Mt. Everest is not located on or adjacent to British territory, nor has it ever been. So, we have to ask why the Brits were so fascinated with the mountain? There are two obvious possibilities: first, because it was named after a Brit or secondly, because it was the highest point on earth and they had to reach it before anyone else. I strongly suspect that it was the latter reason. Sir George Everest was a very good administrator of the Survey of India, but his biographers do not shed that positive of a light on the man separated from his work. It is hard to imagine that there was that much attraction to climb the mountain because it was named after him. The Brits, of course, were the dominant world explorers during the 18th and 19th centuries, but getting beat out of reaching the North Pole in 1909 and the South Pole in 1911 had to hurt their national psyche. Therefore, when the highest point (sometimes referred to as 'the third pole') came within their grasp, it was an objective they could not let go of. Of course, the Brits held a huge advantage over anyone else since they had access to Tibet, due to their 'invasion' of Tibet and the subsequent Treaty of 1904. They also had a unique position with the ruling family of Nepal. And lastly, they also had all of India from which to stage their expeditions. Essentially, had the British not been the first to the summit with all their advantages, it would have been a national disaster of the first order.

Another consequence of Mt. Everest finally being climbed is that it 'released' the overwhelming interest that this one peak had held for so many decades. Mountaineers could move on to new challenges. Hunt essentially said this in the final chapter of his book. "The attraction of Everest tended to focus too much of the resources available for promoting mountain exploration; now that its summit had been reached, it should be possible to give practical encouragement to larger numbers of enterprising explorers and mountaineers to go far and wide, in the Himalaya and elsewhere, in search of climbing and in pursuit of other interests." This was true until the 1990s, when once again the draw of the highest point on the surface of Earth has attracted far too much attention. The advent of commercial climbs on Everest has of course brought with it all the negative aspects of man's fatal attraction with the mountain. If we attempt to find some consolation with the current state of affairs, maybe it is for the best that one small area is ravaged, saving other less traveled areas from the masses.

Whatever happened to the triumvirate of Shipton, Tilman, and Smythe? All three had been key figures in the 1930 Everest attempts, so now that the mountain had been summited, it is time to close the chapter on the twilight of their mountaineering careers.

After the Cho Oyu expedition, which for reasons I will not elaborate here was a difficult time for Shipton, capped with the disappointment of not being included in the Everest 1953 party. For a good

part of the 1950s, he remained in England working as a gardener and handyman, but most notably as the head of the Outward Bound School. In the summer of 1957, he made his final trip to the Karakoram-Himalaya, when he led the Imperial College Karakoram expedition to the glaciated Eastern Karakoram, in particular the Bilafond-Siachen-Teram Shehr glaciers.

Shortly thereafter, he devoted his energy to the exploration of the Patagonian Icefields and glaciated islands of southern Patagonia. From 1957 through to 1965, he made no less than eight expeditions to the region. His final mountain foray was in 1973 where he climbed Mt. Burney (5,700 ft, first ascent) via the West Spur. In the late 1960s through to the mid-1970s, he traveled extensively but succumbed to cancer in 1977.

Harold Tilman's last Karakoram-Himalaya adventure was, as it turned out, the 1950 Mt. Everest reconnaissance with Dr. Houston. Tilman henceforth turned his attention towards sailing; he had his own boats (*Mischief*, *Baroque*) in which he crisscrossed the Atlantic; he also ventured into the Indian Ocean as well as making numerous voyages to Greenland and Baffin Bay. He mixed as much mountaineering with his sailing as he could muster. He penned eight books covering his days at sea to go along with his seven mountaineering books. In November 1977, Tilman and six companions set sail from Rio de Janeiro in the *En Avant*; they were headed for the Falkland Islands. The boat nor the crew were ever seen again. He was seventy-nine years old and still living the dream.

During World War II, Smythe trained troops in the craft of mountain warfare. In 1949, however, Smythe died from cerebral malaria; he was just shy of his forty-ninth birthday. He had gone out to Darjeeling in order to take part in another expedition when the symptoms became manifest. The boy who was diagnosed with a mysterious heart ailment, who even as an adult was considered small and almost frail, turned out to be one of Britain's strongest mountaineers during an era when there were a lot of strong mountaineers. His perspective on not only mountaineering, but exploration can be summed up by one of his quotes: "The true philosophy of the hills lies neither in the physical exertions or lazy contemplation, but in a combination of both, and the genuine lover of mountains finds in them both an outlet for his strength and a clear window to this soul."

Chapter 31

Thunder Dragon: Bhutan

The 'Land of the Thunder Dragon,' otherwise known as the 'Kingdom of Bhutan,' has been an independent nation for many centuries. Like its neighbor Tibet, over the last several centuries it has been one of those 'lands of mystery' to most Westerners. The country extends some 210 miles east-to-west at its widest, and about 100 miles north-to-south. This compact region is nestled between the Indian states of Sikkim and West Bengal on the west, Assam on the south, and Arunachal Pradesh on the east. It shares a common border with Tibet to the north; the 290-mile-long international boundary runs roughly through the crest of the Himalaya. However, there have been a number of ongoing border disputes with the government in Beijing.

Conflict with its neighbors is nothing new in this region; during the 17th and 18th centuries, Bhutan was frequently in conflict with its neighbors. For example, the Bhutanese invaded Sikkim several times but then Bhutan was invaded more than once by the Tibetans. The troops of the English East Indian Company invaded in 1792–93; that particular conflict came to a close with the treaty of 1794, at least temporarily. However, border disputes with India were a common theme throughout most of the 19th century. The British invaded Bhutan a second time during 1834–35. In all fairness to the Raj, this second invasion was prompted by civil war. In fact, the Indian Army was 'invited' into Bhutan by one of the rival factions that happened to be vying for power. Seeing an opportunity to extend its influence, the EIC of course did not hold back. Bhutan also struggled through several additional civil wars in 1864, and again from 1883–85.

The country had been run as a Buddhist theocracy for centuries; the chief characteristics of this form of government were inefficiency and economic chaos. This all changed in 1907 when the theocracy was replaced by a monarchy. The new ruler was called the *Druk Gyalpo*, which translates as the '*Dragon King*.' This first Dragon King was Ugyen Wangchuck, who came to power with the aid of the British. The monarchy was the sole source of power until a National Assembly was instituted in 1953. Essentially, Bhutan is a constitutional monarchy; power is balanced between the king and the National Assembly—the latter is made up of representatives who are voted into office. However, the road into the 21st century has been a rocky one.

The current population is around 2 million, with roughly 70 percent claiming Buddhism as their religion, 20 percent Hindu, some 5 percent Muslim, with the remaining 5 percent claiming no religious

affiliation. The economy is based on agriculture—corn and rice being the main crops—however, some fruit is grown in the warmer southern regions as well. Fishing and livestock are also important in some areas.

During most of the 19th and 20th centuries, Bhutan maintained its isolationist policy. It was difficult for any non-Bhutanese to receive permission to enter the country until the development of a tourist industry in the 1970s. This of course meant that the Himalayan peaks were rarely visited, although as will be illustrated below, some fortunate souls did venture into its mountainous terrain.

The highest peaks often referred to as the 'Great Himalaya' form on an arc across the northern tier of the country (Map 12). A couple of smaller ranges radiate north-to-south from the Great Himalaya; these mountains ultimately merge with the foothills in southern Bhutan. In the very south lies the Duars Plain. Much of the country in the north and center is still covered in forest. Most of the agriculture occurs on the Duars Plain. Bhutan has many small rivers, which like most of the Himalaya flow from north-to-south.

So, what is the highest summit in Bhutan? In most countries, that would be an easy question to answer; however, due to border disputes with China, it depends on which side you want to favor. Politics aside, there are three tall mountains residing in the northernmost part of the arc of the Great Himalaya. Kula Kangri at 24,783 ft (sometimes spelled 'Kulha,' and Kangri is sometimes changed to 'Gangri'), Gangkhar Puensum at 24,770 ft (there are many variants of the spelling), and Liankang Kangri at 24,721 ft. Another high peak is Chomo Lhari (23,996 ft, Jomolhair, or spelled 'Chomolhari'), which is located in the west, highly visible from the trail (now a road) which passes through the Chumbi Valley of Tibet.

The climate of Bhutan varies from south-to-north and is greatly dictated by elevation. The country is impacted by the summer South Asian monsoon, that is most of the rainfall occurs from June–September. The Duars Plain has a subtropical climate, while some 8–10 percent of Bhutan is covered by glaciers and snowfields.

The first recorded Europeans to venture into Bhutan were members of a small diplomatic mission sent from the East India Company during the summer of 1764 (The Eden Mission). The objective was to initiate trade relations with Bhutan. In 1783, another small mission was sent to Bhutan from India; this one was led by Samuel Turner but more importantly included a surveyor and draftsman

known as Samuel Davis. He composed many fine sketches of the landscape and wrote a narrative of his travels, although he never made it into the Great Himalaya.

Another noteworthy early traveler was John White, who was trained as an engineer and worked in Bengal and Nepal in that capacity. In 1889, he was appointed the Political Officer of Sikkim, a position which he held until 1908. This gave him the ability to travel widely, including Bhutan. His name has already been mentioned in the context of the Freshfield expedition of 1899 and with Dr. Kellas. As it turned out, White was a very accomplished amateur photographer.

A book of his memoirs was published in 1909 entitled *Sikkim and Bhutan: Twenty-One Years on the North-East Frontier*, in which he describes many of the villages and temples he was able to visit during the many excursions and expeditions he had participated in. A summary of his travels and a plethora of his photos appear in the May 1914 issue of *National Geographic Magazine*.

White did roam far and wide on four different excursions into Bhutan from 1906 to 1908. He was able to trek to within 10 miles of Chomo Lhari and then to the Lingshi Pass (17,100 ft, labeled 'Phew La' on White's map). Later, this expedition crossed the Bod La (16,290 ft) in northeast Bhutan into Tibet. White's emphasis was on cultural geography and describing the flora and fauna of the region, not on topography or mountaineering. The reason he had no problem traveling where he wished was because he was a friend of the Ugyen Wangchuk. He had met the Ugyen in Tibet, where both were traveling. This was before Ugyen was installed as king. White went to Bhutan as an official envoy of the Government of India during the coronation ceremony of the Druk in 1907.

Captain Henry Meade, a surveyor with the Survey of India, partnered with Frederick Bailey in a four-month-long excursion in Bhutan and adjacent Tibet during the summer monsoon of 1922. Bailey was the new Political Officer of Sikkim and like his predecessors in this office, had access to Bhutan in ways that no one else did (more on Bailey in a later chapter). The small expedition departed Sikkim and crossed over to the Chumbi Valley and then over the Kyu La (14,150 ft) into Bhutan. They proceeded eastwards to the small town of Bumtang, from which they veered due north up the Bumtang Chu. They crossed the Monlakarchung Pass (17,400 ft), which was glaciated on both sides; the previous day, a shepherd had lost four yaks in snow-covered crevasses. They were at this point 5 miles southeast of Kula Kangri and about 4 miles northwest of Gangkhar Puensum. They were headed for the large lake in southern Tibet known as 'Yamdrok Tso,' which was due north of the pass.

En route to the lake, they had some brief but comprehensive views of the eastern side of Kula Kangri. They crossed two passes: the Drum La (16,660 ft) and the Uyu La (16,150 ft), before reaching the lake. They spent a handful of days at Yamdrok Tso surveying before venturing southwestwards to another sizeable lake, the Pomo Tso (16,200 ft). After surveying around this body of water, they took a trail towards the northwest over the Dap La (~17,000 ft), where they descended to the important town of Gyantse, which lies on the primary Lhasa-to-India route. Captain Meade was able to survey some 9,500 sq. miles of land; about half of it had never been surveyed before. An article written by Bailey which describes his expedition and includes his map can be found in *The Geographical Journal*, Vol.64, No.4, p.291.

The well-known botanist Frank Kingdom-Ward passed through Bhutan in 1925 on his return from southeast Tibet and the exploration of the Tsangpo gorges, but he spent little time in the area. The next written account was that of a Mr. and Mrs. Frederick Williamson, accompanied by a George Sherriff and Frank Ludlow in the summer of 1933. Mr. Williamson was at that time the Political Officer in Sikkim. The party made its way east up on the Monla Karchung La (17,442 ft) a little south of the Kulha Kangri in Bhutan. Some days later, they crossed over into Tibet by the Kang La and then Bod La, the same route taken by White in 1906. Sherriff and Ludlow were naturalists; their specialties were flowers, of which they collected thousands of seeds, and they were also noteworthy ornithologists.

Chomo Lhari on Short Notice

The first climb in Bhutan that was recorded took place in May 1937, when a British subject, Frederick Chapman, who worked as a secretary to the Political Officer of Sikkim, decided to make an attempt on Chomo Lhari (23,996 ft). Chapman had participated on the 1936 Marco Pallis expedition to the Zemu Glacier and environs—so, he had some Himalayan experience. In addition, in the early 1930's he had been an expedition member to the arctic as well as the Greenland Expedition of 1932-1933. Chapman had experienced his fair share of cold weather.

Chapman had seen the north side of the mountain on several occasions while on the trail which traverses the Chumbi Valley of Tibet (it connects Sikkim to Lhasa. Chapman had spent eight months in Lhasa prior to this expedition). He knew the northern routes would be too difficult, so he planned on climbing from the south. There was one small problem—he had never laid eyes on or knew anything

about the southern side, which is accessed through Bhutan. This did not deter him from making plans for his own small expedition.

Through his political connections, he had no trouble securing permission from the Bhutanese for the climb. He did, however, have some trouble locating a climbing partner or two; the major obstacle was the extremely short notice. He had started to organize this trip in early April, which allowed little time if he was going to start in late April. The handful of climbers he contacted who lived in India were unable to join. There was of course no time for a climber to come out from Europe. In the end, he was able to recruit a twenty-four-year-old fellow Brit, C. Crawford, who worked in Calcutta. There was only one problem, Crawford had zero experience on snow or ice—a potentially serious handicap when high on a 24,000 ft mountain which had never even been attempted.

On the positive side, Chapman was able to recruit three Darjeeling Sherpas, two of which had considerable experience gained on Kamet, Kangchenjunga, and Everest. They were Tondrup, Kikuli, and Pasang. Chapman planned on relying on the experience of Tondrup and Kikuli when it came to decisions high on the mountain. The small party trekked eastwards across Sikkim in early May and then over the Jelep La into Tibet's Chumbi Valley. After spending a few days in the town of Phari (Pagri), the expedition—which at this juncture had hired a few local porters—crossed over the Sur La (15,250 ft) into Bhutan. It did not take long to reach the southern slopes of Chomo Lhari and set up their basecamp. They sent the local porters back to Phari with a load of gear that they did not think they were going to need; this included their crampons. Chapman justified sending their crampons back by noting that they thought, based on the limited views from the north, that they would just travel on skis.

On a reconnoiter from basecamp, they finally were able to see their objective up close from the south. Here is how Chapman described the mountain: "The last 3,000 feet seemed to be just possible." This is not exactly a positive report from a mini-expedition with limited Himalayan experience. Of immediate concern, however, was a deep col that separated the expedition from the start of the climb on the South Arête. They could not breach the gap; it was too deep. They would have to move their basecamp to the next valley to the east. The next day was dedicated to moving camp; it was a struggle with heavy loads; at times they moved through thick groves of rhododendron and juniper, but by late afternoon they set up their new basecamp at 17,500 ft, just below the snowline.

It took them two days, in part due to low visibility, to establish Camp I on the South Arête. The chosen route weaved its way through several of the mountain's glaciers, which turned out to be heavily

crevassed. Initially, Pasang and Kikuli did a significant amount of lead climbing; however, Tondrup—the most experienced of the Sherpas—was not feeling well, so did not go higher than Camp I. The higher they climbed, the deeper and softer the snow they encountered. They managed to establish Camp II in a shallow col on the arête at an elevation Chapman estimated was around 20,000 ft.

The plan was to attempt the summit the next day and then return to Camp II that night, a bold move considering the lack of experience of the party, the snow and weather conditions, and the small matter that it was about 4,000 ft to the apex of their objective. Unphased by the remaining challenges, they headed upwards the next morning. For some reason not explained in the narrative, they ended up climbing too far to the east without gaining much in the way of elevation (poor visibility may have been an issue). After eight hours of toil, they had only gained about 1,000 ft. They turned around and returned to Camp II. It snowed all that night. It was now May 20 and Crawford, who despite his lack of experience and ongoing altitude sickness, had done quite well. Time had gone by quickly; he had to descend so he could get back to his job in Calcutta. Kikuli, who had not been feeling well over the past several days, decided to descend with Crawford; he never came back up the mountain.

Now there were two. Chapman and Pasang packed up bivouac gear and headed back up the mountain from Camp II (recall that Pasang was the least-experienced of the Sherpas). This time they avoided the detour and were able to gain considerable elevation. While they were navigating through a steep icefall, the mountain was hit with a blizzard. With the visibility down to zero, they decided to remain in their tracks in the icefall, waiting for the strong winds to abate, which they did after two hours. Since they were now extremely cold and snow continued to fall, they decided to find a spot to bivouac as soon as possible. They managed to hack out a platform for their tent just above the icefall (~21,500 ft); however, the area was exposed to wind and anything that might slide or roll down the slope from above.

Unphased by the poor weather, they were away early the next morning; they continued on the arête for several hours and then came to a large granite outcrop on the southwest side of the mountain. They alternated climbing on the snow and on the edge of some exposed granite. They were making good time for once, in large part due to the fact that the snow was consolidated. In addition, the storm which had blown the previous day had by now dissipated, giving them impressive views of Bhutan’s verdant forest to the south and the golden plains of Tibet to the north. They eventually reached the Western Ridge and at this juncture had about 500 ft of climbing before reaching the summit. They

plodded upwards over relatively easy ground to the top (first ascent). They only spent five minutes on the summit, as the wind was blowing, and it was cloudy to the north and east.

On the descent, prior to reaching their bivouac, Pasang slipped and shot past Chapman, who had been out in front; they were, however, roped together. It was not long before Chapman was also sliding uncontrollably down the mountain. Both men held on to their ice axes but found it difficult to self-arrest. Finally, Chapman was able to get the pick of his axe into the snow and slow their uncontrolled descent. They were uninjured in their slide of some 300–400 ft.

By now, the clear ink-blue sky of the morning was a distant memory, as it was snowing once again. They trudged onwards and were able to find their tent without any further difficulties, late in the afternoon. They managed to heat some water for tea and swallow a few morsels of chocolate and sardines. Despite being very tired, they collectively decided to continue their descent. As soon as they entered the icefall, a blizzard commenced; they waited an hour for the storm to abate, but it persisted. They could not see the route below due to the storm and they could not camp anywhere in the icefall, so they made the decision to retrace their steps back up to the site of their previous bivouac. “That climb of a mere 300 feet back to our ledge is one of the most dreadful memories that I have. Each single step required a concentration of will-power which I was almost incapable of exerting,” is how Chapman described this memorable event.

They arrived back at their bivouac site and erected the tent and crawled in for the night. It was a miserable night as everything was wet, the wind continued unabated, and snow drifted into their tent. Neither climber was able to sleep despite being exhausted. The next morning, Pasang’s boots were frozen; he had used them as a pillow during the night, and they had to be thawed out over the stove before he could put them on. By the time they emerged from the tent, it had stopped snowing, but fresh snow had obliterated their tracks from the previous day. They made slow progress through the icefall; Pasang stumbled several times, probably because he was not feeling well. By afternoon, it was snowing again, accompanied by poor visibility. Although it was still early, the climbers decided to set up camp, as they deemed it too dangerous to travel over so many hidden crevasses given the conditions and their weakened state.

The next day, they continued to descend and eventually walked past the site of Camp 2, which had been evacuated when Crawford and the two Sherpas descended. The deep snow, cloud cover, and flat light made it difficult to find the route. Chapman decided to try their luck through the lower icefall,

which was a deviation from their ascent route. They were navigating through a field of crevasses when it started to snow yet again, visibility dropping down to about 10 yds. Keeping with their *modus operandi*, they set up their wet tent for another night even though it was only late morning. Negative factors were starting to compound; they no longer had any matches to light their stove, so they could rule out any chance for hot meals or a warm drink. At this juncture in his narrative, Chapman wrote the classic phrase, "I consider myself rather a connoisseur of uncomfortable nights."

The following morning, visibility had improved, so they began the tedious job of route finding through a field of crevasses. Chapman, who was in the lead, came to a 20-ft-wide crevasse but found that it narrowed to 5 ft towards one end. There was a thin-looking snow bridge spanning this part of the crevasse; after some deliberation, Chapman decided he would attempt to jump across rather than trust his weight to the snow bridge. He spent a few moments trying to explain to Pasang, who already had the shaft of his ice axe buried in the snow with the rope looped around the shaft, that he would require some slack in the rope when he jumped. Chapman leapt, but in mid-air the rope became tight and forward progress was halted. He fell about 30 ft but came to a slow stop as the rope dug into the soft snow on the upper lip of the crevasse.

Chapman was now dangling above the abyss while Pasang attempted to haul him to the surface. Without a proper pully system, there was no chance that Pasang was going to be able to extract his partner from the crevasse. After the valiant but feeble attempt by Pasang, Chapman was able to cut a small ledge with his ice axe, which he had by good fortunate been able to retain. He untied from the rope, tied his backpack to the end, and had Pasang haul it to the surface. When the rope came back down the crevasse, Chapman then tied himself back to the end of the rope and went to work figuring out how he was going to extricate himself.

The walls of the crevasse were too wide for him to chimney or attempt to stem, so he had to cut handholds and footholds, and climb the ice like he was ascending a ladder. It took three and a half hours for Chapman to execute a self-rescue. When he finally emerged from the jaws of death, Pasang was sitting on the snow bridge belaying his partner. Chapman was unhurt, so they continued the descent; over the next several hours they made slow but steady progress but came to a halt as another storm commenced; with the storm came the customary low visibility. He did not give any details in his retelling of the story, but Chapman said that this, their last night on the ice, was the worst.

In the morning, they navigated through the last of the crevasses and were by mid-morning lounging on some boulders perched on the edge of a small lake. That evening, the two men were in a yak herder's hut lower down the valley, feasting on yak milk, cheese, and puffed rice.

The trek back to Phari the next day—which was a distance of about 20 miles, including traversing several passes—was certainly no walk in the park for the two climbers, who were not only weakened by the six days it took for the descent, but were both suffering from frostbitten feet. During the trek, they endured another snowstorm and even managed to trek for some time in the wrong direction until a local set them back on the right course. Despite these setbacks, they managed to make Phari and a return to civilization by nightfall.

This climb had been a close shave with death. The poor weather made a three-to-four-day climb into a ten-day epic. Credit must be given to Chapman and Pasang for keeping a level head when the difficulties mounted. It was obvious that Chapman could have exercised better judgment when he selected a partner who had no mountaineering experience for a climb on a mountain in which he knew nothing about. It's easy to be judgmental, but a more cautious approach would have been to use the limited time he had as a reconnaissance trip, find the best approach and scout out the route, and then return at a later date with a couple of experienced climbers to make the ascent. The begging question is why had they sent their crampons back once they had reached the base of the mountain? They evidently had skis, but they are never mentioned again and were evidently not used on the mountain. The Sherpas certainly would not have been able to use skis and it is questionable where Crawford would have been able to use them as well. The whole skis-for-crampons swap was a rookie mistake.

Chapman however is most well-known for his exploits during WWII. He spent 1942-1945 behind Japanese lines on the Malaya Peninsula, spending much of that time amidst the communist guerrillas. He escaped Malaya via British submarine. He wrote a book about his time in Malaya entitled: *The Jungle is Neutral* (1949).

Foreign visitors to Bhutan in the aftermath of World War II were few, but a handful of lucky souls were allowed access. In 1958, a Japanese professor of botany (Nakao) was allowed to venture forth; he ended up publishing some photos of Kula Kangri from the Melakarchung La. In 1963, a Swiss professor of geology (Ganser) was in Bhutan studying its rocks; he published a book entitled *Geology of the Bhutan Himalaya*, in which he displayed many images of the country's mountains.

A Short Trek Across Northwest Bhutan

The next set of travelers who chronicled their Bhutan adventure were Dr. Michael Ward (no relation to Francis Ward) and Dr. Fred Jackson, who in 1964—with permission from the King—ventured across northern Bhutan accompanied by several of the King's retainers. Both men were medical doctors and were in the country as medical advisors to the King. Ward had been on the 1951 British Mt. Everest reconnaissance, as well as being the primary doctor on the 1953 Everest expedition. He had also been on the team that made the first ascent of Ama Dablam in 1961, so he had considerable Himalayan experience. The small party followed the Mo Chu (recall that 'Chu' means 'river') northward to the village of Laya. In the upper Mo Chu Valley, they veered to the east up and over the Gangla Karchung La (16,797 ft), which leads to the upper West Pho Chu. They were now 5 miles south of Tsenda Kang (21,263 ft), the highest peak in the vicinity. After crossing the West Pho Chu, they traversed the Keche La (15,256 ft), which gave them access to the East Pho Chu. They traveled up-valley to the village of Thanza in the Luana District; to the north and east were a host of 20,000–22,000-ft peaks.

The expedition then retraced its inbound trek to Gangla Karchung La, where the two Brits climbed a small peak just to the north of the pass. By now, the rains of recent days had dispersed and they had fine views of the Lingshi Group of peaks to the north, including some impressive rock spires. On the descent, they took a different route—they ventured into the Rodophu Valley.

Two days later, they were in the village of Laya on the westernmost branch of the upper Mo Chu. Over the subsequent five days, they trekked just to the south of the Great Himalaya of western Bhutan towards the town of Paro. They traversed four passes, as they now headed in a southwesterly direction. In this part of western Bhutan, the topography started to change; the mountains became more rounded, with no high peaks until they came to the vicinity of Chomo Lhari. Two days later, they were in Paro, which was the conclusion of their short but memorable adventure. It is noteworthy that Ward commented that even in 1964 the map they were using (from Survey of India) was quite crude and contained a considerable number of inaccuracies.

Kula Kangri (24,783 ft): From the North

After seven years of applying for permission to attempt Kula Kangri within Tibet, a Japanese mountaineering and scientific expedition was finally granted their wish—a permit for the spring of 1986. The Japanese were primarily from Kobe University and under the leadership of Professor Hirai. This was a large expedition by anyone's standards: there were twelve climbers, eight scientists, and four television-newspaper reporters. But that was only the Japanese contingent; there were five Chinese climbers, four scientists, and eight others in support. The personnel and all their gear were transported to basecamp (14,600 ft) in three trucks, two jeeps, and two minibuses. This was going to be the first attempt on Kula Kangri, which features three summits; the Japanese attempted the highest (24,783 ft). Some two-thirds of a mile to the east is the second summit (24,455 ft), and the third is about 1 mile to the north-northeast (24,367 ft).

It was mid-March when the expedition commenced operations. It was very cold and windy, but after waiting seven years for a permit, the team went to work regardless. It took five days for a collection of yaks and horses to transport the climbers and their gear to the site of their basecamp (~17,400 ft) on the north side of the massif. Meanwhile, an advanced group of climbers established Camp 1 (~18,700 ft) in the upper basin of the Kula Kangri Glacier, which was about 12 miles from basecamp. Their planned route was up the West Ridge, but there was a steep ice wall some 1,300 ft high that had to be climbed before they could gain access to the ridge. It took the lead climbers five days to scale the wall, fixing ropes as they needed. The reason it took five days was that it was so windy that they could only climb for a limited time each day.

Once they had gained the ridge, the slow pace continued. Camp 2 was placed at ~20,300 ft and Camp 3 at ~22,300 ft. Between camps 2 and 3, the ridge takes the form of several steps with steep cliffs barring progress; there were even a number of crevasses on this part of the ridge. Above Camp 3, they encountered a 220-ft-high rock cliff which at first glance looked difficult if not impossible to climb; fortunately, they were able to work their way around it to the south (towards Bhutan), and in so doing found a steep snow slope that bypassed the rocks and led towards the summit. At the base of this snow slope, they installed Camp 4 (~23,200 ft). During the ascent of the ridge, the weather had been poor, but on summit day their luck changed: blue sky, light wind, but cold (around -20^{o} F).

Three Japanese climbers struck out from Camp 4 on April 22; they had no trouble on the snow slope en route to the summit ridge. The summit ridge was narrow and highly corniced, so it took several

hours to traverse to the actual summit. That afternoon, the three stood atop one of the highest unclimbed peaks that existed at that time. The summit was so small that they had to take turns standing on it. The next day, with continued favorable weather, two additional Japanese climbers summited as well.

The Three Spiritual Brothers

In the autumn of 1986, a British-sponsored expedition set out from Paro intent on summiting Gangkar Punsum (24,770 ft, many variations of the spelling, the name translates to something like 'The White Peak of the Three Spiritual Brothers'). The leader was S. Berry, who had considerable Himalayan experience. This was a modern expedition in the sense that it was composed of three distinct groups: climbers, trekkers, and a film crew. Since Bhutan was a land of mystery, the film crew would spend a considerable amount of time and effort capturing not only the varied landscapes, but the culture of the people as well.

In addition to Berry, the climbing team consisted of: Jeff Jackson (American), Lydia Bradey (New Zealand), Steven Monks (British), and Harry McAulay (British), Dr. Ginette Harrison and Stephen Findley. They were also accompanied by Yeshey Wangchuck, a Bhutanese tourist guide who had climbed some of the smaller peaks in his country; he had also attended a mountaineering guide school in Japan.

The expedition traveled by minibus and truck up the Melakar Chu to the village of Bumthank, from which they would begin the approach trek. The trek to basecamp was up the Mangde Chu Valley and took nine days; this was not virgin ground. A Japanese expedition had traveled up there the previous year and an Austrian expedition some time before the Japanese. The trekking route started in a thick forest of bamboo, pine, and cedar trees; higher up it passed through birch and rhododendron, and then finally into the Alpine zone. The expedition also employed forty-five yaks to transport their supplies to basecamp. The setting for basecamp was idyllic; there was a large meadow adjacent to an emerald-green lake above which the pointed summit of Gangkar Punsum loomed some 8,000 ft above. By the time they had established basecamp, it was the third week of September and the monsoon precipitation had terminated.

The next day, a party of climbers and porters started to haul loads up the glacier in order to establish their advanced basecamp. It was, however, time for the trekkers to begin their return hike and leave the mountain to the climbers and film crew. The chosen climbing route was the South Ridge; this

was the same route used by the Japanese the year before. They had been able to ascend three-quarters the way up the mountain before throwing in the towel. The route was primarily on ice/snow, but there were some steep rock sections interspersed. Berry's organizational plan was flexible; the number of camps to be established would depend on the conditions and how well the climbing team was operating.

The first prominent feature on the route was The Snow Dome, which once climbed would provide access to the South Ridge proper. Camp 1 (~20,500 ft) was established above the Japanese Gully, the gully being the main feature on the lower Snow Dome. Above the gully, the route alternated between sections of rock and sections of snow, which ultimately led to the top of the Snow Dome. Most of the climbers took eight to nine hours to make a carry from advanced basecamp to Camp 1 and then to return to advanced basecamp; the steepest sections were fixed with ropes.

While the team had been climbing these lower sections, there had been considerable snowfall from post-monsoon storms. Consequently, once the top of the Snow Dome had been reached, the climbers retreated to basecamp to rest and wait for an improvement in the weather and snowpack. The plan, as it evolved, was to place Camp 2 just past the top the Snow Dome. Above, the route followed the narrowing ridge to the base of a rock buttress.

The climb resumed after the clouds had dissipated; however, strong winds developed (60–70 mph) and with all the recent snowfall, the team had a lot of blowing snow to contend with. Despite the adverse conditions, they were able to establish Camp 2 (~22,000 ft) just off the Snow Dome at the base of the 200 ft rock buttress. From there, their options were to climb the buttress or make a long traverse below the buttress and then head upwards via several interconnecting snowfields. They decided on the latter route but only made the traverse; they never made it any higher. The continuous wind and cold temperatures had broken team morale—there would be no summit attempt.

The climbers returned to basecamp, where they were evacuated by helicopter because the passes below were buried in fresh snow (it was now late October). It had been an expensive expedition as the Bhutanese Government was charging them climbing fees *per diem*. (One has to wonder if the helicopter evacuation was legit or just a way of the authorities squeezing some extra $$ from the expedition?) Their highest point was some 2,700 ft below the summit and a few hundred feet lower than the Japanese had managed the year before. As of the wiring of this book the summit has still not been reached, and hence is the world's highest unclimbed peak.

In 1998, the Japanese applied to the Bhutan Government for a permit to attempt Gangkar Punsum, but the application was rejected. The Japanese, however, regrouped and in 1999 they were able to mount an expedition from Tibet and summit Liangkang Kangri (24,721 ft), a close neighbor of Gangkar Punsum just to the north (sometimes called 'Gangkar Punsum North').

In 2002, a Korean expedition was able to climb Shimokangri (23,635 ft, known in Bhutan as 'Kangphu Kang') from the north, that is the Tibetan side. It is interesting to note that the author of the article (found in *Japanese Alpine News*, 2002) pointed out that the maps they were using all listed the peak with slightly varying heights, while a Russian-produced map did not indicate the height of the main peak at all. This whole cluster of mountains is not only controversial in the sense of what country they reside in, but there is obviously still some topographic work to be done as well.

As it turns out, Gangkar Punsum is the highest unclimbed summit on Earth, and as explained in this paragraph, it looks like it will remain that way for some time. In a short article in the *Japanese Alpine News* of 2012, the author noted that the Bhutanese Government opened mountaineering to foreign expeditions in 1983. As we have already seen, a number of expeditions from various parts of the globe took advantage of that opportunity; however, in 1994, the government decided that they would no longer issue any permits for any peak higher than 6,000 m (19,685 ft), out of respect for local inhabitants' spiritual beliefs. In 2003, they tightened down even more—mountaineering in Bhutan was forbidden on any peak. At the time of writing this manuscript, that ban had not been lifted; although trekking is allowed, it is expensive.

Chapter 32

The Eastern Himalaya

Everything east of Bhutan is what I am going to define as the 'Eastern Himalaya.' A quick glance at a map or satellite imagery indicates that the Himalaya of Nepal-Sikkim-Bhutan lie on a roughly west-east line. From Eastern Bhutan, they run to the northeast for about 380 miles; the highest summits form the international border between Tibet and in the Indian state of Arunachal Pradesh. This state was formed in 1987 from territory that had formally been a part of Assam. Arunachal Pradesh is bordered on the west by Bhutan and Myanmar to the east; its southern border lies adjacent to the Indian states of Assam and Nagaland. The name 'Arunachal' is derived from the Aruna Mountains; Arunachal Pradesh translates into 'land of the rising sun' or 'the land of the dawn-lit mountains.' In most of the older texts, the Eastern Himalaya are typically referred to as the 'Assam Himalaya.'

Like Bhutan and much of the other Indian territory bordering Tibet, there are numerous areas of dispute with the Chinese Government on where the actual border lies. Tourism is still very limited in the area and hence there are some virgin areas to be explored for future adventurers. Part of the reason this area has remained undeveloped is that it has been inhabited by a number of forest-dwelling tribes that, during the period of the Raj and into the Indian period as well, have been very hostile to any and all outsiders. The policy of Delhi has been to let these folks live their lives outside of mainstream society.

Although Arunachal Pradesh is quite remote and relatively untraveled by Westerners, the National Institute of Mountaineering and Allied Sports is located in the western part of the state. This facility is sponsored by the Government of India and trains not only mountaineers but runs courses in paragliding, rafting, and cycling.

Historically, there were three main passes that connected Arunachal Pradesh with Tibet; in the far west, very close to the Bhutan border, is Bum Di La (14,209 ft), which provides a connection to Lhasa; to the east is Tunga Pass (17,250 ft, 'Tulung' and various other spellings), and then just east of where the Tsangpo River enters India is the Yonggyap Pass (13,020 ft).

The eastern tip of the Himalaya continues another 50 miles northeast of the border with India and is anchored by the summits of Gyala Peri (23,930 ft, 'Sow's head') and Namcha Barwa (25,465 ft, 'blazing meteorite'), both of which are entirely within Tibet. Although there are plenty of impressive

mountains even farther to the east and northeast, this is considered the end of the line as regards to the Himalaya.

The Tsangpo River flows between Namcha Barwa and Gyala Peri, where it forms a large bend; thereafter, it flows to the south en route to India. The name of the river is like many geographic features in this part of the world—confusing. The Tsangpo is technically called the 'Yarlung Tsangpo River,' but the first part is often dropped. After flowing eastwards across a large part of southern Tibet, and passing Namcha Barwa, for some mysterious reason, the name changes to the 'Siang.' Once it flows out of the mountains into Arunachal Pradesh, it is called the 'Dibang,' and then finally it changes over to the 'Brahmaputra' near the border with Bangladesh. I will refer to it as either the 'Tsangpo' or 'Brahmaputra.' The focal point of interest in this part of the Himalaya over the first half of the 20th century was not the mountains but rather the so-called 'Tsangpo Gorge.' The gorge is within a 16,000 ft-plus deep valley which itself lies between Gyala Peri to the northwest and Namcha Barwa to the southeast; these two summits lie just over 13 miles apart. Within the valley, there are several gorges, hence sometimes you will see a reference to the Tsangpo gorges.

As it turns out, there was considerable interest in the early 20th century by geographers regarding these gorges and as well as the 'Brahmaputra Falls' (although the river is still called the 'Tsangpo' this far north). The falls were reported by a pundit named Kintup, a native of Sikkim who was enlisted by the British to travel through this part of southeast Tibet and note the geography. Kintup first visited the region in 1878 with his mentor pundit Nem Singh. The two men had been instructed to travel down the length of the Tsangpo as far as possible, ideally all the way to Assam. They were able to venture to the vicinity of Namcha Barwa, but no further.

Some years later, Kintup made a second clandestine venture, this time solo, which turned out to be a four-year period of extreme hardship (to use the word 'epic' would be an understatement). In short, he endured being sold into slavery to a group of monks; however, slavery was not going to deter him from completing his mission. Persistence paid off; he was able to carry out his clandestine, eyes-on survey despite all of the setbacks. This included cutting hundreds of logs and then dropping them into the river in the hope that an observer in Assam would see them float by. This simple but labor-intensive project, if successful, would prove without question that the Tsangpo and the Brahmaputra are one and the same river.

Another one of his accomplishments was that he was able to penetrate part of the way into the Tsangpo Gorge from the west. On his return to India, he reported a 150 ft waterfall on this section of the river. News of this waterfall excited the geographic community because a river of this size rarely contains a waterfall of this magnitude. As regards to the logs that he had deposited in the river, the observer in Assam never got the letter Kintup had sent him regarding the dates to be on the watch. As a consequence, a vast amount planning as well as manual labor had gone to waste.

The first-known Westerners to explore the region were Lieutenant-Colonel Frederick (Frank) Bailey and Major Morshead, who in 1911 made their first foray into the area, followed up with an extensive visit in 1913, which I will now outline. During the opening months of 1913, the two men were members of the 2nd Abor Punitive Expedition sent into the region to track down the tribesmen who had murdered a British Political Officer who had been visiting the area. As noted above, the inhabitants (Abor) of this part of the Himalaya were fiercely independent, lived as tribes in the jungle or forest, and had an inclination for making war with their neighbors and foreign powers. On a number of occasions, they murdered Western travelers who strayed into their territory, including British diplomats. Although the Government of India never really tried to subjugate these peoples, they did on occasion send in the troops to remind the locals who was ultimately in charge. It should be explained that the term 'Abor' simply means 'native,' and does not refer to any one ethnic group, but was used by the British to refer to the hill tribes that occupied northern Assam.

The 1st Abor Punitive Expedition had gone into the field in 1894, so there was a precedence. The 1913 expedition numbered over 2,000 troops but also included two survey teams and a host of scientists. Bailey and Morshead were at that time captains in the Indian Army; Morshead was a surveyor, and Bailey an Intelligence Officer. The latter was also a respected naturalist, specializing in butterflies, birds, and big game. Both men had also been on Rawling's 1904–05 Gartok expedition, where they followed the upper reaches of the Tsangpo to its headwaters. (In 1916, Bailey was awarded the RGS Gold Medal for this bit of exploration.)

In the winter of 1913, both men were assigned to the same survey team based near the village of Mipi, on the Dibang River. It was here that Bailey conceived of the idea of traveling up the Brahmaputra (Dibang)-Tsangpo to the vicinity of Namcha Barwa and beyond if possible. Bailey was gambling because this bit of exploration could easily turn into a political nightmare; he did not have any permission from Tibetan authorities. He did, however, have written permission from the Indian Army that stated: "… he should be allowed as much scope as possible for the exercise of his talents as regards

exploration." So, with the approval of his immediate superior in the field but without any approval from higher ranks or the Foreign Office, Bailey recruited Morshead and set out for southeast Tibet in May of that year.

Although they had limited supplies and funds, Bailey had a good command of the Tibetan language and knew many of the customs, which he trusted would compensate for what they lacked materially. Morshead would survey the terrain while Bailey would collect flora and fauna and worry about logistics. The pair made their way up the lower Tsangpo River, eventually reaching a point due east of Namcha Barwa without undue difficulty (Map 13). Because they were relying on the local porters for transport, which was often an exasperating ordeal because they had to exchange porters when they crossed from one district to the next, their progress was slow. This, however, gave Morshead time to wander off in various directions in order to conduct his survey. At the village of Lagung, they left the Tsangpo, which flows from the west, and trekked north in order to complete an end-run around the 25-mile section of the river which has no trail, or so they thought at the time. This is where the river flows through the gorges and forms a sharp bend; on satellite imagery it looks like a capital Greek omega (Ω).

The two men rejoined the Tsangpo at the village of Tsela Dzong, due west of Namcha Barwa. From there, they proceeded to follow the river to the east in order to cover as much ground as possible, which they had missed when they had taken the detour to the north. It was during this phase of their expedition that the two men ventured onto the northern slopes of Namcha Barwa. The mountain had been viewed some 40 miles to the south in 1911 by a survey party that was working in conjunction with the Abor expedition of 1911–12. Up until that time, although several pundits had seen the big mountain close at hand, no Westerner had been able to get near it.

On Namcha Barwa's Trilung Glacier, which was covered with surface moraine, the two explorers found a number of 10-ft-tall, actively growing birch trees. Looking north across the valley towards Gyala Peri, they could see that on the mountain's southern flank was a glacier which branched into three sections—although they never had the opportunity to venture over and explore it. Instead, Bailey went down the river using a secondary track, while Morshead worked on the survey. Bailey's independent journey was a mini-epic in itself; in summary, he was able to cover all but 10–12 miles of 25 miles that they had skipped earlier. Although it nearly cost him his life, Bailey was to locate the falls that Kintup mentioned, but as it turned out, they were only 30 ft high, not the 150 ft as reported. Sometime later, it was determined that since Kintup was illiterate, he memorized important information as he traveled. When he returned from his second expedition, which was four years in length, he gave a verbal report

which was then written up by a clerk in the office of the Survey of India. Somewhere in the transcribing process, a 150 ft waterfall on a tributary river was confused with the 30 ft fall on the Tsangpo; the rest is history.

Although they would have loved to follow the river for its entirety through the gorge, it was beyond their capability at that time. Once they had completed their work in the region of the gorge(s), Morshead and Bailey resumed the westward trek along the Tsangpo (up river). After traveling several weeks along the middle section of the Tsangpo, they ventured south and eventually crossed the Himalaya, where the northeast border of Bhutan adjoins Tibet.

From mid-May through to mid-November of 1913, the Bailey-Morshead duo had trekked some 1,683 miles and were able to produce a very detailed map of this part of southeastern Tibet. In addition, in their report (see References) they also provided a considerable amount of useful information regarding the conditions of the trail, places to camp, water sources, attitudes of local inhabitants towards foreigners, etc. In fact, it was intended to be used as a reference in case the Indian Army ever needed to march through this region. However, despite the productive field work, they had not been able to work their way through the entire length of the gorge, leaving the door open for future travelers.

The next Western visitor to the region was botanist Frank Kingdon-Ward, who of course traveled far and wide throughout the region, cataloguing the flora and collecting flower seeds. In the spring of 1924, accompanied by Lord Cawdor (the Earl of Cawdor), they traveled from the Chumbi Valley to the Tsangpo River at the town of Tsetang. Over the course of the next several months, they trekked eastwards along the river to the village of Gyala. Their attention was focused on the flowers and plants of this part of Tibet, which is quite verdant, rather than on surveying. Nevertheless, they were able to add to the geography of the region as they spent the winter of 1924–25 on the western and southern slopes of Namcha Barwa.

In the spring, Kingdon-Ward and Cawdor ventured through the yet-to-be-explored part of the gorge; this involved moving through dense stands of forest and at times hacking their way forward. There are many species of rhododendrons thriving there; in some areas they found 150-ft-tall pine trees and in others large magnolias. At times, they were forced to trek thousands of feet above the river and at other times through narrow rock gorges. They were able to complete the traverse of this part of the river; the net geographical results of their travels were that the Tsangpo gorges actually consisted of one of the world's deepest valleys, which itself contains multiple narrow rock gorges. In addition, they were

able once and for all to dispel the myth that there was a large waterfall on the river; actually, as we have seen, there are several small ones. Kingdon-Ward returned to the region in 1933, where he concentrated his botanizing work on the area to the southeast of Namcha Barwa.

Tilman in the East

In early spring of 1939, Tilman decided to forgo an invitation to the Karakoram on Shipton's expedition; instead, he organized his own small expedition to the Himalaya of Western Arunachal Pradesh—the Monyul area which today is part of the West Kameng district. He hired three Darjeeling Sherpas and headed to Tezpur in Assam. From this town, they trekked due north through the lowland jungle, with an elephant carrying the bulk of their gear, to Bompu La (~9,000 ft). There were several east-west ridges that had to be crossed prior to reaching the Great Himalaya. Today, there is a road (#13) that snakes its way up much of the same route that Tilman took, although at one point the road continues to the northwest, eventually crossing into Tibet via the Bom Di La.

On the northward trek roughly halfway to his final destination, Tilman came down with a case of malaria, which of course slowed forward progress for some days. After his recovery, the small party continued northward, eventually reaching a shepherds' encampment called 'Lap,' situated in the Gorjo Chu (14,500 ft). It was now May 4 and snow occasionally fell over the following week. Despite Tilman's on-again, off-again bouts with malaria (one of the Sherpas had it as well) and the fickle weather, it was time to explore the Great Himalaya lying just to the north. They made their first foray towards the northwest; they got as far as the village of Dyuri; 10 miles to the north is the Tulung La (17,250 ft), which they did not attempt to reach. After returning to their basecamp at Lap, they trekked to the northeast. On this latter track, Tilman came face to face with Gori Chen (20,669 ft, Gorichen), which he attempted to survey. Amazingly, Tilman had brought a plane-table along, which he now deployed; however, he was a bit too close to the mountain for a proper survey.

Over the course of the next week, Tilman once again suffered through the effects of a virulent strain of malaria. The weather during this period was unsettled: it was often clear for the first few hours in the morning, but then mist and clouds would develop and remain in place for most of the remainder of the day. When Tilman finally began to recover, it was unfortunate that one of the Sherpas was still down with his own case of malaria; in addition, the weather remained cloudy. Now in a weakened state and with persistent dismal weather, Tilman decided that a retreat was the only proper course of action.

Today, much of Tilman's route is known as the 'Bailey Trail' because it is the route which Lieutenant-Colonel Bailey and Major Morshead took on their return from exploring the Tsangpo bend area in 1913. A number of adventure companies offer this as a short trekking option.

As we have seen, the explorers who ventured into the Eastern Himalaya during the first three decades of the early 20th century were concentrating on the terrain at lower elevations, so what about the higher terrain? In the southwestern part of Arunachal Pradesh lies a small collection of this state's highest summits. Kangto, which straddles the international border, was climbed by the Japanese in 1988 from the north side (I have seen the elevation range from 23,146–23,262 ft, 'Kanggardo' seems to be the Chinese spelling). The climbers used the northwest ridge to gain access to the summit. Gorichen (20,669 ft) has been climbed a number of times, mainly by Indian expeditions.

To the northeast, the first to leave boot prints on the summit of Namcha Barwa was the 1992 Japanese Expedition. On the lower part of the mountain, they climbed via the Southwest Face, but then higher up moved over to the South Ridge. Until this successful expedition, Namcha Barwa had been the highest unclimbed peak on Earth. Gyala Peri, which lies north of the Tsangpo River and about 13 miles north of Namcha Barwa, was first climbed in 1986, also by a Japanese expedition. Their route lower down was via the West Face, but after a lot of avalanche activity they moved operations over to the South Ridge. After establishing three camps, they were able to summit despite the deep snow and foul weather that plagued them for most of the climb. According to the Alpine Club's Himalayan Index, both Gyala Peri and Namcha Barwa have not been summited since their respective first ascents.

If you think that in this day and age that our knowledge of the highest summits of the Karakoram-Himalaya is complete, think again. Case in point. The Himalayan Index gives the elevation of Gyala Peri as 23,457 ft (7,150 m); if you zoom in on Mapcarta it shows up as 23,589 ft (7,190 m), and finally we have the Japanese who used an aneroid barometer while on the summit; their value is 23,930 ft (7,294 m). The point here is that one has to be careful in being too dogmatic about elevations, especially on less trodden peaks.

Chapter 33

The Big Peaks: What Took So Long?

In an earlier chapter, it was noted that none of the fourteen 8,000 m peaks (>25,942 ft), all which reside in the Karakoram-Himalaya, had been climbed as of the start of 1950; this is of course assuming that Mallory and Irvine never summited Everest in 1924. This is a bit of a conundrum in light of the fact that climbers had been to the vicinity of 28,000 ft on the north side of Everest on *three occasions*, and above 27,000 ft on three more occasions. In addition, only a few of the 131 peaks which are 7,000 m (>22,700 ft) or higher had been summited by 1950 as well. Globally, there are 117 peaks which lie in the 7,000–7,999 m range, and 107 of those reside in the Karakoram-Himalaya. Table 3 shows the seventeen peaks in the Karakoram-Himalaya over 7,000 m that had been climbed prior to the 1950 (most of those ascents were in the mid- to late-1930s). There was a considerable amount of talent climbing in the Karakoram-Himalaya by the mid-1930s, and it is a reasonable assumption that at least one or two of the 8,000 m peaks would have been summited by 1950. Why not? In this chapter, I want to offer some possible solutions to this interesting question. In addition, we will look at the evolution of high-altitude mountaineering over the past 100 years, as it ties into the first question.

Table 3

Peak	Ht (m)	Ht (ft)	Year Climbed
Nanda Devi	7,816	25,642	1936
Kamet	7,756	25,445	1931
Jongsong	7,483	24,550	1930
Nanda Devi East	7,434	24,389	1939
Kabru II	7,412	24,317	1935
Kirat Chuli (Tent Peak)	7,365	24,163	1939
Chomolhari	7,315	23,999	1937
Mana I	7,272	23,857	1937
Kharta Phu	7,227	23,710	1935
Pauhunri	7,107	23,375	1911
Kharta Changri	7,093	23,270	1935
Khun (Nun Kun)	7,087	23,218	1913
Lixin Ri I (Kellas Rock Peak)	7,078	23,222	1935
Satopanth	7,075	23,212	1947
Rakhiot	7,070	23,196	1932
Dunagiri	7,066	23,182	1939
Kharta Phu West	7,018	23,025	1935

Table 4 shows the number of reconnaissance's and attempts on the fourteen 8,000 m peaks prior to the first ascent as well as prior to 1950. I have listed some of the early 'attempts' as reconnaissance's (Eckenstein and the Duke's K2 bids) because they never got very high and the expeditions were not in the least capable of making a serious effort at that time.

Table 4

	Prior to First Ascent (FA):			Prior to 1950:	
Everest	3 recons	6 attempts	FA=1953	2 recons	5 attempts
K2	2 recons	3 attempts	FA=1954	2 recons	2 attempts
Kanchenjunga	4 recons	4 attempts	FA=1955	2 recons	4 attempts
Lhotse	0 recons	1 attempt	FA=1956	0 recon.	0 attempts
Makalu	3 recons	1 attempt	FA=1955	0 recon.	0 attempts
Cho Oyu	1 recon.	1 attempt	FA=1954	0 recon.	0 attempts
Dhaulagiri	1 recon.	6 attempts	FA=1960	0 recon.	0 attempts
Manaslu	2 recons	1 attempt	FA=1956	0 recon.	0 attempts
Nanga Parbat	2 recons	6 attempts	FA=1953	2 recons	5 attempts
Annapurna I	0 recons	0 attempts	FA=1950	0 recon.	0 attempts
Gasherbrum I	1 recon.	1 attempt	FA=1958	1 recon.	1 attempt
Broad Peak	0 recon.	1 attempt	FA=1957	0 recon.	0 attempts
Gasherbrum II	0 recon.	0 attempt	FA=1956	0 recon.	0 attempts
Shishapangma	0 recon.	0 attempt	FA=1964	0 recon.	0 attempts

It is clear that a number of peaks were not even attempted prior to 1950, while the main effort was focused on four peaks: Everest, K2, Kangchenjunga, and Nanga Parbat. Interestingly, three of the fourteen listed in Table 4 were climbed without any prior attempts or reconnaissance's. As a point of reference, note that of the fourteen highest peaks, first ascents were made by expeditions from nine countries, with the Austrians earning the most summits. Seven of the fourteen peaks were climbed from 1953 through to 1956. Annapurna I was the first to be summited in 1950 by the French; the last to be climbed was Shishapangma in 1964 by a Chinese expedition.

The posed question is: why were so few peaks taller than 7,000 m not climbed in the 1920s and 1930s compared to the 1950s and 1960s? (For simplicity, I will compare the 1930s to the 1950s) As we have seen, there was considerable climbing activity in the earlier period, with some very good climbers, but summits of the taller peaks remained elusive. Like most lines of historical inquiry, frequently we find that there is more than one possible answer or solution; often, there are multiple contributing factors. Therefore, let me list some of the prominent points when it came to climbing the highest summits.

- Political access
- Weather
- Climbing technique—step cutting
- Supplemental oxygen
- Gear: heavy, bulky
- High-altitude porters—lack thereof
- Personal fitness of climbers
- Cost: people had to have access to $$$ and time, lack of worldwide participants
- Strategy: the 'how' of climbing a high mountain
- Sheer numbers: the number of expeditions increased in the 1950s

I am not suggesting that all of these were reasons why few of the highest peaks on Earth had been climbed by 1950; some were very important and others were not factors at all, at least in my opinion. Keep in mind that some of these points are interconnected as well.

1. Access: If you have been reading this book, then it should be very obvious that large parts of the Karakoram-Himalaya were off-limits to foreign climbers until the second half of the 20th century or even later. Most of the region had no local talent that at that time was interested in high-altitude mountaineering (there was no tradition of mountaineering and little in the way of monies even if they were interested)—leaving it up to foreigners to make first ascents in most cases. Nepal, Bhutan, and the Eastern Himalaya were late to open their doors to foreign mountaineers. We can only speculate what might have been different had Nepal been open to the West over the entire 20th century; would Everest had been climbed from the south decades earlier? We have to keep in mind that the Brits had a massive advantage over any other nation because they had exclusive rights in Tibet in the first half of the 20th century that no one else had.

However, there were plenty of high mountains located in accessible regions of the Karakoram-Himalaya throughout the first half of the 20th century, yet no one managed to stand on the top of a really high summit, despite the fact that there were some very strong efforts made in the 1930s by various expeditions. Kamet (25,447 ft) had been summited in 1931 and Nanda Devi (25,642 ft) in 1936. Roughly speaking, 25,000 ft did appear to be the altitude barrier with the exception of Everest. Therefore, political access seems to have played a relatively minor role.

2. Weather: The big unknown in going to high altitudes is the weather. There is of course significant discussion these days about global climate change, which then begs the question: what role if any did weather play in all of this? In other words, did poor weather hinder the earlier climbers more so than it has after 1950? The short answer is we do not know. The weather during the numerous British Everest expeditions, especially those in the 1930s, was pretty poor—but was it worse than the weather in the 1950s or 1960s? Some data exists for earlier periods, but the quality is not good enough to make a comparison to more recent decades (actually it is, because the spatial and temporal resolution is not very high. For example, the sampling and collection of weather data by orbiting satellites was not initiated until the late 1970s). Historical data has been incorporated into large datasets of atmospheric conditions (often called 'reanalysis'), but one would have to be very careful interpreting the results of various comparisons—let's say from the 1930s to the 1950s, because of the low resolution of the data and the extreme nature of the terrain in the Karakoram-Himalaya. One may in addition be tempted to look for trends in the dates of the onset of the Asian monsoon at a long-term station such as Calcutta or Darjeeling; however, the period before the onset of the monsoon can be very stormy in the Himalaya as well.

Without entering a long discussion on this topic, let me just conclude by saying that weather is a huge factor even today, probably the single most important, not only for its instantaneous impact (low visibility, strong winds), but the fact that it also greatly influences route conditions (icy, very deep soft snow) days or weeks later. However, has it changed for the better or worse over the last five or six decades, and how has it influenced summit success rates? Once again, we just do not know. With that being said, it is important to realize that mountain weather forecasting has improved, as well as the delivery of these forecasts to mountaineers. So, even if the weather is unchanged, let's say the number of days of good weather suitable for summiting an 8,000 m peak is unchanged today from what it was in the early decades of the 20th century. But if an expedition has prior knowledge, let's say a few days in advance, that a window of opportunity can be expected, it has time to get its summit teams into position. This in and of itself has immensely benefited modern climbers with respect to their older comrades.

Even by the 1950s, the big national expeditions were getting daily weather forecasts broadcast via shortwave radio, which I believe gave them a serious advantage from the more sporadic weather updates that the British Everest expeditions received via radio during their 1920s and 1930s efforts. Most expeditions of that same era, which had a fraction of the resources that the British had on Everest,

did not receive any forecast at all. The 1930 international Kangchenjunga expedition did take a radio and had arranged for regional forecasts to be broadcast from Calcutta every evening. However, their radio was smashed when it arrived at basecamp.

For virtually all of the mountaineering expeditions of the 1930s, weather was a major factor when the climbers were high on the peak and ready to make a summit attempt. The two exceptions were Nanga Parbat and K2. Nanga Parbat was nearly summited in 1934 by Schneider and Aschenbrenner, who in the vicinity of 25,000 ft with perfect weather decided, for unexplained reasons, to turn around and try for the summit the next day. Unfortunately for them and a lot of others, the next day was the start of a massive blizzard which in the resulted in the deaths of ten climbers.

The only other attempt that was abandoned not because of poor weather was the 1938 American attempt on K2. Petzoldt and Houston were around 26,000 ft or higher when they ran out of steam. One interesting note is the Anglo-American expedition to Nanda Devi; they climbed during the middle of the monsoon and were still able to put two members on the summit—sometimes you get lucky.

3. Step Cutting: One aspect of climbing technique that was prevalent long after crampons had been invented by Oscar Eckenstein circa 1900, was the labor-intensive process of step cutting on ice or hard snow. Most climbers prior to World War II were using nailed boots but would resort to cutting steps on steeper ground. Step cutting is very hard work and slow; hence the frequent hiring of Alpine guides by Western climbers when they traveled to the Karakoram-Himalaya. Step cutting was a skill very much used and honed by the guides—essentially a badge of honor. Most Western climbers prior to World War I did not have the skill or endurance to cut steps at altitude hour after hour (one exception was Dr. Kellas). By the 1920s, expeditions were importing fewer guides because they were cutting their own steps when needed. Step cutting was necessary in part, but not exclusively by any means, due to the fact that porters would be using the same route, and hence it had to be suitable for heavy-laden men/women who often had little or no climbing experience.

The bottom line is that step cutting is significantly slower than cramponing up a slope even when using fixed ropes or belaying. Granted, front points on crampons were not added until climbers began to use them on steep terrain, which turned out to be in the early 1930s. The net result was the reduction in the need for step cutting, although it took some time for the new gear to be used in the

Karakoram-Himalaya. For example, I cannot find any references to front-pointing in Karakoram-Himalaya literature in the 1930s. There might have been a few climbers that started using front-point crampons and neglected step cutting, but it certainly was not common.

The net result is that the rates of ascent during the first half of the 20th century were generally slower than it was in the second half, when using crampons with front points was the norm. This is critical at higher elevations where swinging an axe to cut steps is extremely tiring. The addition of front points onto crampons also had the effect of opening new route options that would not have been considered by a climber who had to cut steps. During the period when the fourteen 8,000 m peaks were first climbed, step cutting was on the wane and cramponing was in accession.

4. O_2: An entire book could be written about the history of the use of supplemental oxygen in mountaineering; so, what I say here is bare bones. As noted in the appropriate chapters, the debate whether to use it on Everest climbs was a hot topic during the 1920s and 1930s. On the successful 1953 expedition, Hunt made it mandatory for the two summit attempts. The question here is what role did supplemental oxygen plan in the chase for the summits of the highest peaks? Supplemental oxygen was available since the mid-1920s as we saw it in use on the 1922 and 1924 British Everest expeditions. It was of course taken on most of the 1930s Everest expeditions—and yet no team was able to summit. Perusing the Everest literature, I have found five accounts where climbers went to 27,000 ft or higher without it; for perspective, only five peaks are taller than 27,000 ft.

Interestingly, supplemental oxygen was used by seven expeditions which made the first ascents on the fourteen 8,000 m peaks; which of course means that seven were climbed without it. Was supplemental oxygen the magic ingredient? Based on extensive reading, I would have to answer Yes and No. This seems to be an indecisive answer; however, let me explain. Ultimately, the non-use of supplemental oxygen did not keep climbers off the summits of the higher peaks prior to 1950—there were other factors. However, the frequent use of it in the 1950s and onwards did open the door for a larger cadre of climbers to reach those elusive summits. It also increased the safety factor by reducing the incidence of edemas, providing a better framework for clear decision making, cutting down the frequency of frostbite, etc.

The use of supplemental oxygen is based on a very critical point: that the heavy O_2 units are carried to the mountain and on the lower flanks by everyone except the climbers who are going to use it

higher up. Note that the weight of the units used in the 1920s was not that much heavier than those used in the 1950s; what changed was some of the nuts and bolts (masks, fittings, etc.) which made the later units (somewhat) more reliable. Supplemental oxygen did make the higher peaks more accessible in the 1950s and 1960s to a larger group of mountaineers as long as the expedition had hired enough manpower to carry the units to the base of the mountain and up the lower slopes, which of course they did*. Therefore, its prevalent use from the 1950s onwards did play a role regarding the high success rate on the 8,000 m peaks, but I don't believe it explains why a few high peaks were not summited prior to 1950.*

5. Gear: We have already noted the use of crampons and supplemental oxygen, which in a broad sense fall in this category, but let us look at the less glamourous items such as tents, clothing, and sleeping bags. The main issues with the older gear were its weight and its inability to stay dry. Canvas was the material of choice for tents and backpacks, which is close to an order of magnitude heavier than the same square footage of ripstop nylon or any polyethylene-based fabric. In addition, once canvas is saturated, it weighs that much more and can be difficult to dry out. Clothing was based on wool with some duck down used in jackets and sleeping bags. Various hides and furs were in use as well. Most boots were made with leather that when wet took a long time to dry, if ever. Wet boots often froze at night and needed thawing in the morning before the wearer could put them on. The net result was that the gear and clothing used by the early explorers was heavy and was slow to dry when compared to materials introduced during the last quarter of the 20th century. The accumulated heavy and wet gear over the course of weeks that an expedition would be on a mountain, would in the end take a physiological and physical toll. How much of a role it did play remains difficult to assess, but probably varied from one expedition to the next. I don't believe gear issues played a role in the difference from the 1930s to the 1950s, as there seems to be only incremental changes between those two periods.

6. Porters: As we have seen throughout this book, porters were an indispensable factor in the ability of Western climbers to reach every increasing altitude. It took a small army of porters to get the expedition to the base of its objective, and then it took a smaller but more experienced team of high-altitude porters to help get the climbers established high enough on the mountain in order for a summit attempt. Prior to 1950, there were few local porters trained in the craft of high-altitude mountaineering,

although the seeds were being planted for a corps of Sherpas and Baltis that would eventually emerge. This lack of skilled manpower was of course why the early expeditions sometimes imported two or three Alpine guides, although this was often not enough. Nevertheless, I don't believe that a lack of skilled high-altitude porters was the reason that few peaks over 7,000 m were climbed until after 1950. Keep in mind that it was really during the 1950's expeditions that porters, Sherpas in particular, received on-the-job training. One could successfully argue that by the late 1950's enough Sherpas had been trained to tilt the balance in terms of an expedition being successful in reaching their chosen summit, but not so much in the early 1950's.

7. Fitness: When it comes to personal fitness, it is difficult to assess the abilities of the early mountaineers and compare with the contemporary professionals. Based on the ascent rates reported by some of the early climbers, despite the disadvantages illustrated above, they were in extremely good cardiovascular conditioning. After spending several months in the Karakoram-Himalaya, one would of course expect to be in fine form. The flip side of that is that in the late 19th century and first two-thirds of the 20th century, mountaineers did not seem to exercise very much when not on an expedition or climbing in their local mountains. In other words, they would probably be no match for today's elite, who are constantly training or spending a vast amount of time each year in the mountains.

This does not, however, explain why few climbers were unable to break the 25,000 ft barrier in the 1930s, for example, and why so many did in the 1950s. The reason it does not explain the difference is because I don't think it was a factor. The men and few women who participated in the expeditions of the 1950s and who subsequently climbed the higher peaks were probably in the same fitness category as those from earlier decades. Recall that until the late 1960s, expeditions had to trek for days and at times weeks to get to the base of a mountain which today can be reached in a few hours or at most a few days. In earlier times, expedition members used that inbound trek as a training period prior to their climb.

8. Cost: Accessibility and the cost are worth noting because the price of travel to the Karakoram-Himalaya has decreased since the advent of mass tourism in the late 1960s and early 1970s. In addition, the length of time required for an expedition has decreased as well. The net result has been the inclusion of a larger pool of talent. In other words, that is an inverse relationship here: as the price of

admission ($$ and time) into the Karakoram-Himalaya has decreased, the number of talented climbers has increased. Many of the strongest climbers in recent decades have originated from Eastern European countries and the territory of the former Soviet Union. They did not start to arrive on the scene until the 1970s, and even then they were few in numbers until the fall of communism in the early 1990s. Although of great interest in the overall scheme of mountaineering in the Karakoram-Himalaya, it does not address the issue regarding the difference between the 1930s and the 1950s.

9. Strategy: Had the strategy of climbing a major peak changed from the early period to the 1950s? No. The first ascents of the highest peaks were accomplished by large expeditions, but then these were nothing new. Prior to 1950, there had been quite a few large, pure mountaineering expeditions, even if we do not count the British Everest expeditions (international expedition to Kangchenjunga, Germans on Nanga Parbat, French on Gasherbrum I, Americans on K2). Was there some other magic trick that turned the tide? Once again, no. This does not negate the fact that when mountaineers of the late 19th and early 20th centuries, who had gone through their apprenticeship in the Alps, transitioned to the Karakoram-Himalaya, that they did not have to rethink how they were going to climb these much bigger peaks. For example, it was common for early mountaineers in the Karakoram-Himalaya to expect that they could ascend 4,000–5,000 ft on summit day, as they had done frequently in the Alps. This was in most cases wishful thinking when it came to the 7,000 m peaks in the Karakoram-Himalaya. The solution was to establish additional high camps, which in turn meant that more gear had to be carried higher up, which of course required more manpower (siege tactics versus Alpine style). However, by the early 1930s, there was plenty of Himalayan knowhow; hence I don't believe that tactics changed much from the 1930s to the 19.

10. Numbers: This is related to factor eight, but here the issue is not the number of individual climbers able to participate, but rather the fact that the number of large expeditions venturing into the Karakoram-Himalaya increased significantly in the early 1950s. An increase in the frequency of expeditions attempting the higher summits, due to the post-war economic boom; nationalism; as well as the opening of Nepal; would mean that the probability of those mountains being climbed would naturally increase as well. An interesting point as seen from Table 3 is that the majority of large expeditions that set out in the 1950s and early 1960s to climb one of the 8,000 m peaks were successful.

Most of the unsuccessful attempts on these peaks occurred in the 1920s and 1930s; the exception was the summit of Dhaulagiri, which quite a few climbers failed to reach in the early 1950s—before succumbing to boot prints in 1960.

By the early 1950s, the economies of European nations were starting to recover from the devastation of World War II to the point that there were monies available for expeditions. A major influence was nationalism; after the death and destruction of the war, nations wanted to celebrate their national survival. And finally, good-natured competition generally spurs people on to greater achievements. One of the obvious points is that expeditions to 8,000 m peaks prior to 1950 were concentrating on the harder summits; had there been some effort directed at several of the 'easier' 8,000 m peaks in the 1930s, I have no doubt that one or two would have been summited.

Conclusion: I alluded to it at the start of this chapter; in my opinion, there were several key factors, not just one, which made the difference between 'failure' to climb any 8,000 m peak in the 1930s and success in the 1950s. I don't believe it was any one or even two factors that contributed to success in the 1950's; rather it was a combination of factors.

As a meteorologist by training, I am certainly biased when it comes to the importance of weather and weather forecasts, but I firmly believe that having timely and reasonably good forest available to climbers in the 1950's was a game changer. In addition, the transition from step-cutting to cramponing on front points was also an important development. Secondary factors which I believe made so many of the expeditions of the 1950s onwards so successful were: the increase in number of proficient, high-altitude porters. This essentially increased the size of the climbing team. Another factor was the use of supplemental O_2. I believe that its use opened up the field of entrants; in other words, a larger pool of climbers would have the ability to go to extreme altitudes, compared to the number who could climb to that same altitude without it. Finally, the sheer number of expeditions that went into the Karakoram-Himalaya beginning in the 1950s to tackle one of the 8000'ers meant that the percentages were shifting over to the side of the climbers. New and improved lightweight gear available from the 1970s onwards has certainly benefited mountaineers since that period; however, it does not explain the difference between the 1930s and 1950s.

Another watershed transition occurred in high-altitude mountaineering in the late 1970s and early 1980s when the elite professional climbers, such as Reinhold Messner, Peter Habler, and Jerzy

Kukuczka were starting to climb the 8,000 m peaks in Alpine style. It is interesting to ask regarding these stripped-down expeditions, where the supplemental oxygen was left behind, and where the climbers were wearing and using the latest in lightweight gear: what were their main concern(s)? As it turns out: the weather and how it affected route conditions.

Chapter 34

Conclusions

Ice Wars: The Battle on the Siachen Glacier

In April of 1984, several battalions of soldiers from the Indian Army were deployed by helicopters to three passes on the west side of the Siachen Glacier: Sia La, Bilafond La, and the Gyong La, just inside Pakistan territory, it what was called Operation Meghdoot. The soldiers constructed and occupied outposts on this high terrain which have been continuously occupied to this day. A few days after the Indians had occupied the high ground, the Pakistani Army moved into positions just below the Indians. Over the first several years, the two armies exchanged artillery barges and there were several small ground-based attacks. Little has changed since that time; over the decades, there have been no gains or losses in terms of territory. In essence, the Indian Army has taken control of all of the Siachen Glacier and Saltoro Ridge to the west. So, what prompted this bold and costly move in the spring of 1984?

The Siachen Glacier lies in the northernmost sector of the disputed land of Kashmir. The area was under contention as early as 1947, when India and Pakistan were partitioned out of British India. Both sides wanted Kashmir—all of it, not just their half. They fought over it in 1947–48, with no side winning or losing. The military draw resulted in a settlement called the Karachi Agreement, which basically split Kashmir in half; the southern half went to India and the northern to Pakistan. A border or what has become the Line of Control (LOC) was delineated at that time; however, the wording in the agreement for the northernmost sector—that is north of a point referred to as NJ9842, lying near the terminus of the Siachen Glacier—was not delineated. It reads, “there north to the glaciers.” Obviously, there is considerable ambiguity in that type of language.

From 1949 until 1984, the lack of clarity in the delineation of the line was not an issue. Both countries issued permits for mountaineers to climb in the region. What is generally believed, although not confirmed, is that the Pakistani Army had designs on occupying the high ground of the Saltoro Range; however, Indian Intelligence got wind of this and pre-empted the Pakistanis. As it turned out, the Indian Army had been on the Siachen Glacier in the late 1970s and in the early 1980s for small training exercises and as a temporary show of force to their Pakistani neighbors. The government in Delhi, however, had no designs on occupying it at that time. What prompted the Pakistanis to plan to occupy

the higher ground in the Saltoro Range is a mystery; it could be as simple as they wanted to have their own show of force.

In November of 2003, both sides were able to sign a ceasefire agreement; however, there was not actually any change in the situation on the ground. At the time of writing, both armies still occupy the same outposts and camps they did back in 1984. The cost has been high: it has been estimated that well over 2,000 men have died, possibly closer to 3,000, since 1984. Some of the fatalities have been due to bullets and exploding artillery shells; however, far and away the primary culprit has been avalanches and High Altitude Pulmonary Edema/ High Altitude Cerebral Edema (HAPE/HACE). There is a financial cost as well; with the massive logistics needed to keep some 3,000 men on each side warm and fed, the bill for the Indian Army alone is estimated to be on the order of hundreds of thousands of dollars per day. There is of course an ecological cost: trash, human waste, spent artillery shells, fuel for heating and operating ground equipment is often 'disposed' on and within the glacier.

The stalemate goes on year after year. The Indian Government has allowed some mountaineering groups into the region over the decades but not a lot. Is there any solution? Several have been offered; one is that the greater Siachen Glacier region be turned into a Science Center so that scientists from all nations can reclaim it as a high-altitude laboratory. Another idea is to form a Peace Park; that is a national park-style unit that would be shared by both Pakistan and India. These ideas have been out for a number of years but no one in Delhi or Islamabad seems willing to negotiate a lasting settlement. (For the most comprehensive article on this, see: R. Baghel, M. Nusser, *Political Geography*, Vol.48, Sept 2015, pp.24–36.)

But wait, in the summer of 2020 India and China were involved in border skirmishes in Ladakh; both sides have been building roads and other infrastructure in nearby remote regions. Border conflicts in the Karakoram-Himalaya are not a thing of the past.

Big Treks: The Spirit of Exploration Lives On

Although the period of formal 'exploration' of the Karakoram-Himalaya has concluded, there is still a lot of adventure and personal exploration to be had. New climbing routes are being established each year, seldom-used routes can be reclimbed. Long treks linking various glaciers are possible and provide a once-in-a-lifetime experience. 'Exploration' is often what you make of it—you may not be the first to tread some slope or glacier, but it is new to you and hence you have to see it in that frame of reference.

In a brief account printed in *Japanese Alpine News*, Vol.8, 2007, R. Hayashibara wrote about his amazing glacier trek in 1979 through the Central Karakoram. This was dubbed the 'Five Great Glaciers Expedition.' His expedition took the following route: they ascended the Kero Lungma Glacier, traversed the Nuski La to the Hispar Glacier, ascended the Hispar Glacier to Hispar Pass, descended the Biafo Glacier to the Braldu Valley, ascended the Baltoro Glacier, veered onto the Abruzzi Glacier, traversed the Conway Saddle, and then climbed Sia Kangri (24,350 ft). After the climb, they descended the Siachen Glacier, trekked up the Lolofond Glacier, traversed Bilafond Pass, and finished off by descending the Ghyari Glacier. They were supported by trekkers that carried additional supplies and gear to various prearranged points along their route. This expedition would have made Longstaff, the Workmans, as well as Shipton-Tilman envious. I believe these kinds of linked-up treks/traverses are some of the most adventurous to be had.

During the winter of 1981–82, a four-person American team led by Ned Gillette skied around Mt. Everest. They were not able to ski all of the terrain, so hiked when skiing was not possible. The team started in Nepal and over an eight-week period spanning December and January made their way over and across the southern section. Due to restrictions in place at that time, they could not simply cross into Tibet; they had to enter via Lhasa. The northern half of the circuit was completed in the period from late April through to early June.

Also occurring over the 1981-82 period was the Trans Himalaya Expedition which saw four Indian soldiers trek just under 5,000 miles from Arunachal Pradesh across to the Karakoram Pass. (*India Today, June 15, 1982*)

In the early summer of 2002, a joint Indian and Japanese team (five from each country) made another spectacular trek. In this case, they trekked up the Shyok River (they had to make twenty-seven river crossings) and after visiting the historic Karakoram Pass, ventured onto the ice of the Central Rimo Glacier, working their way west to Col Italia. At this juncture, they explored the large ice plateau to the south of the col, now called 'Teram Shehr Plateau.' From here, Sakai and Tanahashi made the first ascent of Panmanabh (23,064 ft) after establishing a basecamp on the plateau and one camp on the South Ridge.

After the climb, the expedition proceeded to descend the Teram Shehr Glacier and to the Siachen Glacier. They found the site on the south slope mentioned by the Workmans in 1912, where they had found remains of a small encampment. The expedition next trekked down the lower half of the

Siachen Glacier, staying at various Indian Army camps. The expedition was supported at various junctures by a logistics team as well as the Indian Army. They spent fifty days on the adventure. For the narrative, see: *Japanese Alpine News*, Vol.3, "Indian-Japanese East Karakoram Expedition 2002," H. Kapadia, H. Sakai.

From February through to June 1997, a small team of Indian women trekked from Arunarchal Pradesh westwards through Bhutan, Sikkim, Nepal, and onwards to the Karakoram Pass. Although the route was not entirely in the mountains, it was still a major accomplishment; they covered 2,800 miles in 198 days (V. Muni, *The Himalayan Journal*, Vol.55, 1999).

Starting in the fall of 2008 and resuming his trek again in spring 2009, Robin Boustead completed his quest for a continuous link along the length of the Nepal Himalaya. This has become known as the 'Great Himalaya Trail'; essentially, it links pre-existing trekking routes into one continuous east-to-west route. In time, the concept has expanded to include Bhutan and much of the Indian Himalaya as far north as Zanskar. With constant road building in much of these areas, some of the trails are losing their mystic; it's difficult to stay excited about trekking when buses, trucks, and 4x4 stir up mountains of glacial silt as you walk. We will just have to see what the future holds for these types of adventures.

In conclusion, I offer a Frank Smythe quote from his book *Camp Six* (1937, Chapter 8), which describes the 1936 attempt on Mt. Everest. The team had just established Camp I on the north side of the mountain but were confined to tents because of the cold and heavy snowfall. They spent all day in their sleeping bags reading and eating. Smythe wrote, *"Why are we lying here, when we might be eating and drinking in comfort at sea level? Yet, for some curious reason, I would not exchange the discomfort of Everest for the comfort of sea level … 'Why do you do it?' How can we explain when we don't know? And we don't care whether or not we are understood—not a bit. We only know that in discomfort, in storm, in the beauty and grandeur of the mountains we have discovered something very much worthwhile."*

Glossary

Tibetan/Ladakhi (place names taken from Bailey 1914)
Ri: hill
Kangra: snow hill, ice mountain
Tse: peak
La: pass
Chu: river, water
Tso: lake
Tang: plain
Dzong: fort
Drok, Drokpa: grazing ground

Nepali
Khola: valley

Balti
Atta: wheat flour with a high gluten content used to make flatbread
Chogo: large, big
Chogori: big mountain
Kumdan: dam
Lungma: valley
Nala: valley
Kangri: peak
Parbat: mountain, or small mountain range
Shwas: debris flow

Urdu
Pahar: hill, mountain

Scientific Terms

Ablation Valley: A narrow, ice-free region next to a glacier that forms a valley between the most recent lateral moraine and the sides of the valley.

Bergschrund: A type of crevasse found near the upper part of a glacier. Sometimes they can be found on steep walls as well. These generally are the largest crevasses in terms of width and length.

Glacial Table: A large rock balanced on a narrow shaft of ice. Essentially the ice on the edges of the rock have melted over time while the ice in the middle has been insulated from both the sun and warm air temperatures.

Icefall: A broken part of a glacier where the ice flows over a cliff or other obstruction on its bed. This causes tensile forces in the ice to stretch the ice apart.

Jetstream: Area of strongest winds in the lower atmosphere (~30,000–40,000 ft) which separates cooler air in the north from warm air to the south (Polar Front). Windspeeds range widely but typically 150–200 mph. The Jetstreams move and are linked with extratropical storms, hence they are a part of the 'storm track.' There can be multiple Jetstreams in existence around the globe at one time.

Moraine: Piles of rock and dirt 'bulldozed' or transported by a glacier.

Terminal Moraine: located in front of the terminus (end) of a glacier. Sometimes there is a gap between the current position of the ice and the terminal moraine. It is also possible to have more than one terminal moraine due to a sequence of advances and retreats.

Lateral Moraine: located on both sides of the glacier as material has been pushed to the sides. A few glaciers, or certain sections of a glacier, do not have lateral moraines because the edge of the ice is in direct contact with the sides of the valley.

Medial Moraine: a moraine that is on top and embedded in the upper layers of ice due to the convergence of two or more glaciers. In essence, a lateral moraine of a tributary glacier has formed a medial moraine once two glaciers have merged.

Supraglacial Moraine: rocks and dirt on top of the ice.

Moulin: a vertical shaft in glacier which acts as a water conduit. Supraglacial streams flow into this and then to great depths within the ice.

Neve: consolidated snow, quite dense, may require the use of crampons.

Nieve Penitent: rills and sharp points on the surface of the snow found during the summer. Similar to but much higher and pronounced than suncups.

Serac: large tower of ice in an icefall that has become separated from the surrounding ice. They are often leaning to one side and fall over from time to time.

Shwas (Balti term): a mudflow generally initiated by the release of a glacier-dammed lack or jokulhaup, but can also occur during or shortly after heavy rainfall.

Supraglacial: this refers to anything like rivulets, rocks, dirt that are on top of the ice.

Verglas: thin layer of ice covering a rock face.

Elevations of Peaks and Passes Mentioned in This Book

[Heights for peaks taken from the Alpine Club's Himalayan Index]

Peaks	Elev (ft)	Additional names, summits, or alternative spellings
Abi Gamin East	24,170	
Annapurna IV	24,688	
Arwa Spire	20,834	
Baintha Brakk I	23,897	The Ogre
Baltoro Kangri III	23,949	Golden Throne
Bamohu	20,689	
Biafo-Hispar W.P.	21,350	Biafo-Hispar Watershed Peak was used by Workmans
Chandra Parbat	22,064	
Changabang	22,520	
Changtse	24,450	North Peak
Chaukhamba I	23,419	Badrinath Peak
Cho Oyu	26,905	
Chogolisa	25,157	Bride Peak
Chomo Lhari	23,996	
Chomolonzo	25,557	
Chumiomo	22,405	Chomo Yummo I (various altitudes listed in the literature)
Deoban	22,489	
Devtoli	22,270	
Disteghil Sar	25,869	
Dunagiri	23,182	
Ganchen	21,197	Mt. Ganchen
Gangkar Punsum	24,770	Gangkhar Puensum
Gauangming	21,276	
Gauri Parbat	22,007	
Gauri Sankar	23,420	
Ghent Kangri I	24,280	II: 24,090, III: 22,965. Also called Mt. Ghent
Gori Chen	20,669	
Guma Raichu	unknown	possibly: 21,620 ft. Seen and named by Noel in 1913
Gurla Mandhata	25,242	
Gyala Peri	23,930	
Hathi Parbat	22,070	
Haramosh	24,307	
Hikmul	20,499	
Jannu	25,294	
Jongsong Peak	24,550	
K2	28,251	
Kabru II	24,317	Kabru North (Kabru III: 24,123, Kabru IV: 24,008, Kabru South: 24,005)
Kaimuk Kangri	22,808	
Kalanka	22,739	
Kama Changri	20,640	
Kamet	25,445	
Kangchenjunga	28,168	

Kangchenyao	22,601	
Kanjut Sar I	25,459	
Kangto	23,146	Kanggardo appears to be Chinese spelling
Kellas Rock Peak	23,222	Laxin
Kharta Changri	23,270	
Kharta Phu	23,710	
Kharta Phu West	23,025	Xiangdong
Kirat Chuli	24,163	Tent Peak
Kora Kang I	21,657	
Kula Kangri	24,783	II: 24,455, III: 24,367
Kunyang Chhish	25,761	
La Yoghma Ri	22,401	
Langpo Peak	22,814	
Liankang Kangri	24,721	
Lingtren	22,027	
Lower Silver Throne	20,330 est.	
Mt. Everest	29,031	South Summit: 28,704
Mt. Hardinge	23,270	
Mt. Kailash	21,778	Not considered within the Himalaya
Mt. Koser Gunge	21,001	Khosar
Machapuchare	22,943	
Maiktoli	22,319	
Malubiting	24,468	Indus Nagar Watershed Peak was used by Workmans
Mamostang Kangri	24,659	
Mana	23,857	
Masherbrum, East	25,659	West: 25,610
Menlungste	23,571	
Mentok Kangri	20,608	Mata Peak
Mitre	19,766	The Mitre
Momhil Sar	24,324	
Mustagh Tower	23,897	
Namcha Barwa	25,465	
Nanda Devi	25,642	
Nanda Devi East	24,389	
Nanda Kot	22,509	
Nanga Parbat	26,659	
Nepal Peak	23,546	Southwest Summit: 23,422
Nilgiri Parbat	21,239	
Nilkantha	21,640	
Nun	23,409	Kun (Khun): 23,218
Nyonno Ri	22,060	
Paiju Peak	21,686	
Panmanabh	23,064	
Pathibhara	23,369	
Pauhunri	23,375	
Pinnacle Peak	22,736	Satellite of Nun Kun
Pumori	23,493	
Rakaposhi	25,551	

Rakhiot	23,196	
Rataban	20,229	
Ri-Ring	22,520	
Rishi Pahar	22,939	
Sakram	20,528	
Saltoro Kangri I	25,396	
Saltoro Kangri II	25,279	
Saser Kangri	25,170	
Satnopanth	23,212	
Sentinel Peak	21,293	
Shimokangri	23,365	Kangphu Kang
Shispare	24,970	
Shivling	21,467	
Sia Kangri	24,350	Queen Mary Peak was used by Workmans
Silver Throne	21,653	
Simvu	22,348	
Siniolchu	22,594	
Skyang Kangri	24,786	Staircase Peak used by Duke of Abruzzi
Sokha Brakk	19,875	
Solu Peak	19,727	
Spantik	23,054	Pyramid Peak used by Workmans
Taringban	22,060 est.	Seen by Noel on his 1913 expedition
Teram Kangri	24,219	
The Hawk	22,148	
Tilman Peak	20,685	
Tirsuli	23,208	
Trisul	23,360	
Tsenda Kang	21,263	
Ultar Sar	24,239	
Z1	20,505	Satellite of Nun Kun, named used by Workmans

Passes (col, la, saddle, gap)	Elev (ft)	Additional summits or alternative spellings
Aghil Pass	15,764	
Alchori Col	17,622	
Bagini Pass	20,100	
Barmal La	17,228 est.	Probably closer to 16,700 ft based on Mapcarta
Bhayakara Col	19,260 est.	
Bhyundar Pass	16,688	
Bilafond La	18,200	(Bilaphond), Satloro Pass?
Bod La	16,290	
Bolucho Pass	17,021	
Bompu La	9,000 est.	
Bum Di La	14,209	
Burzil Pass	13,451	
Chang La	18,370	
Chorten Nyima La	19,091	
Chug La	16,100 est.	
Col Des Aiguille	18,351	Named by the Workmans
Conway Saddle	19,596	
Dap La	17,000 est.	
Dongka La	18,152	
Doya La	16,810	
Drum La	16,660	
Durashi Pass	14,700	
Elchi Pass	17,400 est.	This is in the Kun Lun Range
Gangla Karchung La	17,442	
Gayung La	18,700	
Ghonodogoro La	18,323	
Goecha La	16,215	
Gupt Khal	18,992	Zaskar Pass
Haramosh La	16,830	
Hispar Pass	19,521	
Indira Col	18,911	
Italia Col	20,100	
Jelep La	14,390	
Jongsang La	20,223	Jonsong, Jongsong
Kang La	16,680	
Karakoram Pass	18,176	
Kardong Pass	17,582	
Karun Pir Pass	15,932	
Keche La	15,256	
Khanta Khal	14,750	
Khumbo Pass	19,005	
Khunjerab Pass	15,397	
Kongra La	16,848	
Kuari Pass	12,516	
Kurbu Pass	14,600 est.	This is in the Kun Lun Range
Kyu La	14,150	

Langbu La	17,000 est.	Noel in 1913 was looking for this pass
Lhakpa La	22,350	
Lho La	19,622	
Lhonak La	19,500 est.	
Lingshi Pass	17,100	
Lipu Lekh	16,780	
Lukpe La	18,283	
Lwanl Col	19,020 est.	Lawan
Mana Pass	18,478	
Mintaka pass	15,449	
Mirgin pass	15,190	
Monlakarchung Pass	17,442	also spelled: Monla Karchung La
Muztagh Pass (east)	17,689	also spelled: Mustagh
Muztagh Pass (west)	18,527	
Naku La	17,290	
Nangpa La	18,835	
Nepal Gap	20,321	
Niti Pass	16,633	
Nup La	19,173	
Nushik La	16,371	
Peak 36 Col	19,000 est.	Named by Waller Expedition to Peak 36
Sarpo Laggo Pass	18,723	
Saser Pass	17,753	Sasser Pass
Sele Pass	15,125	
Sentik La	16,500 est.	
Sepo La	16,500 est.	
Shalshal Pass	16,390	
Savoia Pass	20,400 est.	
Shaksgam Pass	17,600 est.	
Shimshal Pass	15,535	
Sia La	18,700	
Silver Throne Col	19,610	
Sim La	16,520	
Simvu Saddle	17,700 est.	
Skoro La	16,644	
Sohka La	16,700 est.	
Sella Pass	19,900 est.	
Sunderhunga Col	21,420 est.	Also called ‘Ruttledge Col’ by Shipton
Sur La	15,520	
Tatar Pass	19,000 est.	
Tilman Pass	18,234	
Theu La	17,100 est.	
Tragbal Pass	11,564	
Traill’s Pass	17,228	
Trisul Gap	21,325 est.	
Tulung La	17,250	Tunga Pass
Uyu La	16,150	
Wakhjir Pass	16,152	

Wesm Pass	18,860 est.
Windy Gap	20,450
Yonggyap Pass	13,020
Zemu Gap	19,196
Zoji La	11,575

EXPEDITIONS

[This is not an exhaustive list but rather includes most of the major expeditions and a number of smaller ones from when exploration and mountaineering commenced, through 1964 when the last of the 8,000 m peaks, Shisha Pangma, was climbed]

LEADER	OBJECTIVE (S)
Hooker	Western Nepal and Sikkim
Schlagintweit Brothers	Karakoram, Himalaya, Southern Tibet, Turkestan
Godwin-Austin	Hushe Valley
Godwin-Austin	Masherbrum, lower Baltoro Glacier
Graham	Garhwal, Sikkim (‘attempt’ on Kabru)
Younghusband	Central Karakoram traverse (East Muztagh Pass)
Younghusband	Shaksgam Basin-Shimshal Pass-Hunza
Conway	Hispar-Biafo-Baltoro Glaciers
Mummery	Nanga Parbat exploration and attempt (Mummery dies)
Workmans	Kashmir-Sikkim
Workmans	Biafo Glacier
Workmans	Chogo Lungma Glacier
Eckenstein	Baltoro Glacier, weak attempt on K2
Workmans	Hoh Lungma-Chogo Lungma Glaciers
Ferber	Baltoro Glacier to East Muztagh Pass environs
Longstaff	Garhwal-Southern Tibet
Workmans	Nun Kun exploration
Longstaff	Garhwal (climb Trisul)
Kellas	Pir Panjal-Sikkim
Rubenson & Aas	(‘attempt’ Kabru)
Workmans	Hispar-Biafo Glaciers
Longstaff	Siachen Glacier
Kellas	Sikkim climbing and exploration
Duke of Abruzzi	Baltoro Glacier attempts on K2, Skyang Kangri, Chogolisa
Workmans	Masherbrum-Kondus Glacier
Kellas	Sikkim, Kamet environs
Workmans	Siachen-Kondus Glaciers
Kellas	Sikkim
Kellas	Nanga Parbat
De Fillippi	Baltistan, Ladakh & Rimo Glacier (1914)
Bailey & Morshead	Tsangpo Gorge environs
Kellas	Garhwal
Kellas	Kamet
Kellas	Sikkim-Mt Everest Reconn.
Howard-Bury	British Mt. Everest Reconnaissance (north and east)
Vissers	Saser Range
Bruce	British Mt. Everest Exp. (north)
Bruce & Norton	British Mt. Everest Exp. (north)
Vissers	Hunza (Batura Glacier)
Mason	Shaksgam Basin
Vissers	Saser Range-Turkestan (extended into 1930)

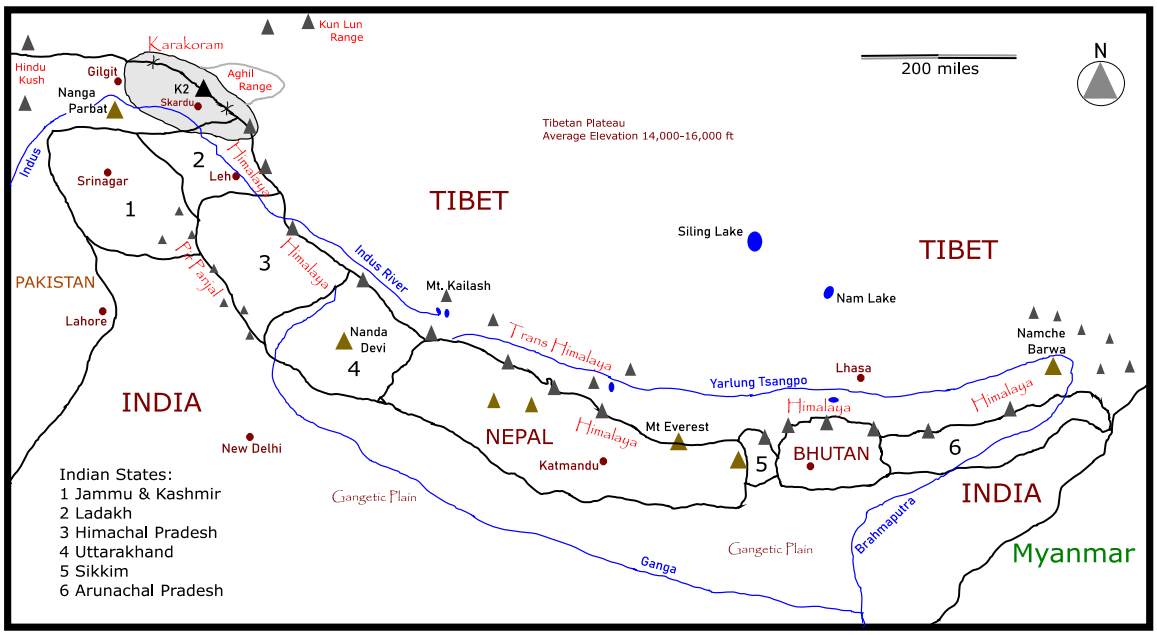
Duke of Spoleto	Baltoro Glacier and Aghil Range
Bauer	German Kangchenjunga Exp.
Dainelli	Siachen-Rimo Glaciers
Dyhrenfurth	International Kangchenjunga Exp.
Smythe	British Kamet Exp. First Ascent
Bauer	German Kangchenjunga Exp.
Merkl	German Nanga Parbat Exp.
Pallis	Gangotri Glacier
Ruttledge	British Mt. Everest Exp. (north)
Shipton & Tilman	Garhwal-Nanda Devi Sanctuary
Merkly	German Nanga Parbat Exp.
Dyhrenfurth	Int. Himalayan Exp.,Baltoro Glacier First ascent of Sia and Baltoro Kangri
Pallis	Gangorti basin
Vissers	Explore northern Karakoram-Shaksgam Basin
Cooke	Kabru First Ascent
Shipton	British Mt. Everest Exp. (north)
Loomis	Anglo-American Nanda Devi Exp. First Ascent
Hunt	Peak 36 Exp.
Bauer	German Sikkim Exp. First Ascent of Siniolchu and Simvu North
Ruttledge	British Mt. Everest Exp.
De Segogne	French Gasherbrum I Exp.
Hotta	Japanese climb Nanda Kot First Ascent
Chapman	Chomolhari Exp. First Ascent
Wien	German Nanga Parbat Exp.
Shipton	Karakoram-Shaksgam Exp.
Hunt-Cooke	British Zemu Glacier Exp.
Waller	Masherbrum Exp.
Houston	American K2 Exp.
Bauer	German Nanga Parbat Exp.
Tilman	British Mt. Everest Exp.
Scharzgruber	German Exp.,Gangotri Basin-First ascents of Bhagirathi North Peak, Chandar Parbat, Sri Kailash
Wiessner	American K2 Exp.
Aufschnaiter	German Nanga Parbat Reconn.
Shipton	Karakoram Survey Exp.
Tilman	Small Exp. to Arunachal Pradesh
Gross	Swiss-German team, First Ascent of Kirat Chuli (Tent Peak)
Vyvyan	Survey of Rakaposhi and Kunyang Glacier
Franks	Attempts on Nanda Kot
Tilly	Small Exp. to Chomiomo in Sikkim
Wood	Small Exp. attempt Nandi Ghunti in Garhwal
Roberts	Reconn. of Saser Kangri
James	Reconn. and climbing in Nun Kun plateau
Gyr	Attempt on Rakaposhi, visited Haramosh La
Lohner	Swiss climb in Garhwal, First Ascents of Kedarnath, Satopanth, Balbala, Nanda Ghunti

Wiley	Attempt on Nilkanta
Tilman	Reconn. of Langtang region of Nepal
Dittert	Swiss climbing in NE Nepal
Braham	Trekked/explored in NE Sikkim
Herzog	*French Annapurna Exp. First Ascent*
Murray	Scottish trek through Garhwal & Kumaon
Tilman	exploration of Annapurna region and attempt on Annapurna IV
Houston	Reconn. of south side of Mt. Everest
Berrill	British Exp. climbs Abi Gamin First Ascent
Shipton	British Mt. Everest Reconnaissance (south)
Riddford	New Zealand Exp. in Garhwal. First Ascent of Mukut Parbat
Duplat	French attempt Nanda Devi
Greenwood	Small Exp. climbed Trisul
Wyss-Dunant	Swiss Mt. Everest Exp.
Shipton	British Cho Oyu Exp.
Aschenbrenner	*German-Austrian Nanga Parbat Exp. First Ascent*
Hunt	*British Mt. Everest Exp First Ascent*
Houston	American K2 Exp.
Lauterburg	Swiss Exp. to Dhaulagiri
Mita	Japanese attempt on Manaslu
Desio	*Italian K2 Exp. First Ascent*
Chorley	British attempt on north face of Rakaposhi
Lowe	New Zealand Barun Exp. Climbed Baruntse First Ascent
Tichy	*Austrian Exp to Cho Oyu First Ascent*
Roberts	British Exp to Dhaulagiri Range, Putha Hiunchuli First Ascent
Siri	California Himalayan Exp.
Davidson	Oxford Univ. Exp. to west Nepal, Climb Rakshya
Franco	French Exp., First ascents of Makalu II and Chomo Lonzo
Ibanez	Argentinean Exp. to Dhaulagiri
Hotta	Japanese prevented from attempt on Manaslu so try Ganesh Himal
Rebitsch	German-Austrian exp climb Batura Gl. and ridge to 24,000 ft
Braham	Kangchenjunga south side reconn.
Band	*British Kanchenjunga Expedition First Ascent*
Franco	*French Exp., Makalu First Ascent*
Gregory	Merseyside Himalayan Exp., explore east of Menlungtse
Jackson	Scottish women's Exp., Climb Bhairav Takura
McArthur	Small British Exp. of climbing/surveying in Lahul
Braham	Small British Exp. to Spiti
Steinmetz	German Exp., Annapurna IV (First Ascent), Kang Guru, Yulo Kang Peak
Eggler	*Swiss Exp. summit Lhotse (First Ascent) and Everest via SE Ridge*
Hartog	British climb of Muztagh Tower First Ascent
Magnone	French climb Muztagh Tower same time as Brits but via SE Ridge First Ascent

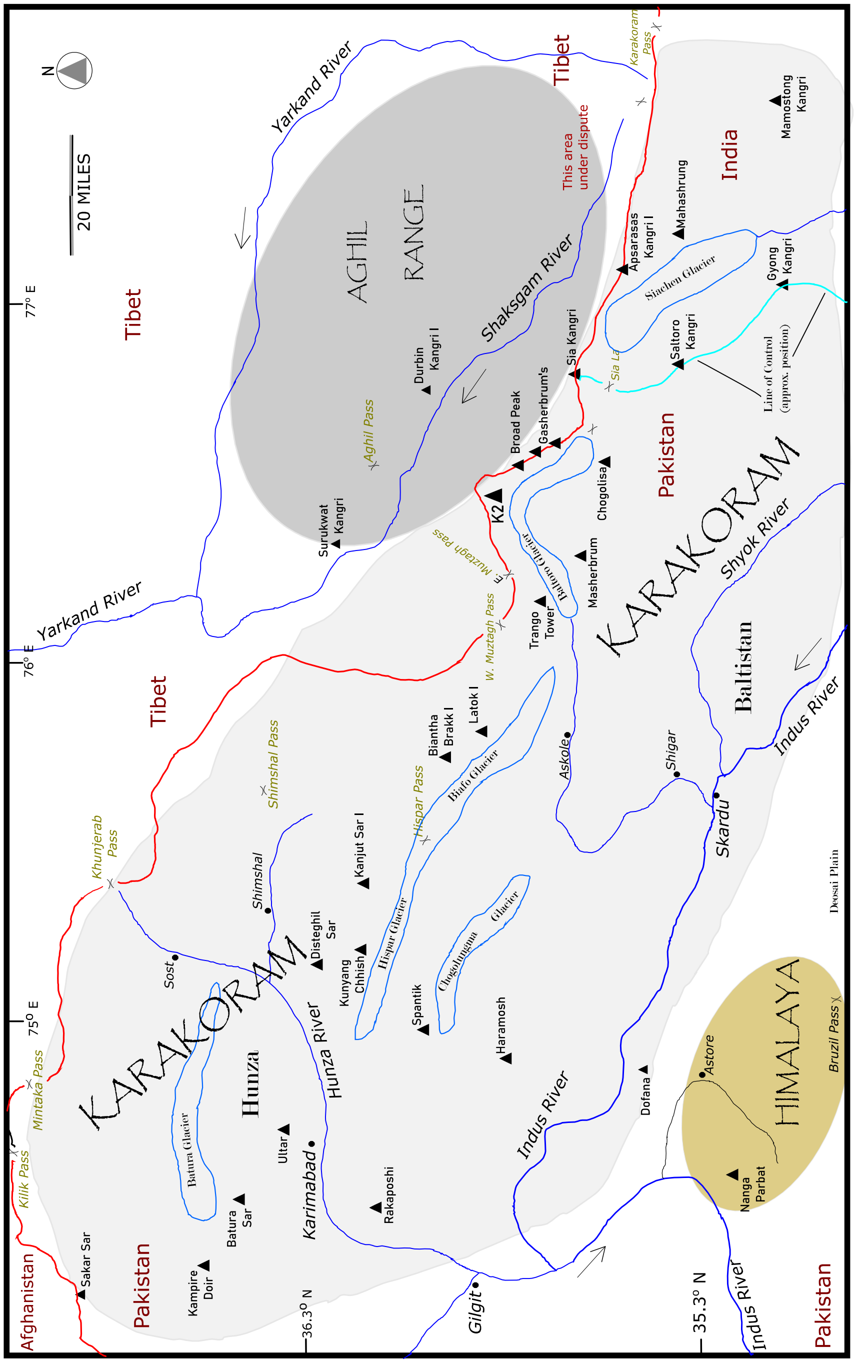
Holmes	Small Exp. to explore-survey Spiti region of India
Roberts	British 'attempt' on Machhapuchare
Dyhrenfurth	Attempt on Lhotse-extensive climbing in Solo Khumbu
Evans	Attempt on Annapurna IV
(leader unknown)	Argentinean attempt on Dhaulagiri
Maki	*Japanese Exp. to Manaslu First Ascent*
Greenald	Small party explores Snow Lake region of Karakoram
Moravec	*Austrians climb Gasherbrum II, First Ascent*
MacInnes	Foursome attempt SW ridge on Rakaposhi
Walmsley	Manchester Himalayan Exp. attempt on Masherbrum
Shipton	Imperial College Karakoram Exp., explored Siachen Glacier envrions
Schmuck	*Austrians climb Broad Peak First Ascent and attempt Chogolisa*
Magnone	French recon. Jannu
Gregory	Attempt on Disteghil Sar
Banks	British-Pakistani Forces Himalayan Exp., Rakaposhi First Ascent
Roiss	Austrians climb Haramosh First Ascent
Cassin	Italians climb Gasherbrum IV First Ascent
Kuwabara	Japanese climb Chogolisa First Ascent
Schoening	*Americans climb Gasherbrum I First Ascent*
Gurdial	Indians climb Mrigthuni First Ascent
Warr	Attempt on Minapin
Jones	British attempt on Ama Dablam
Moravec	Austrian attempt on Dhaulagiri
Edwards	Attempt on Batura I from the east
Monzino	Italians climb Kanjut Sar First Ascent
Roberts	British Exp. climb Annapurna II First Ascent
Stefan	Austrians climb Distaghil Sar First Ascent
Noyce	Brits climb Trivor Sar First Ascent
Singh	Indian Exp. to Mt. Everest up to 28,300 ft (south)
Chan-Chun	Chinese climb Mt. Everest via N-NE Ridge
Stephenson	Saltoro Muztagh region-attempted K12
Hillary	Himalayan Scientific Exp. (Silver Hut), Climb Ama Dablam First Ascent; attempted Makalu. Exp started in 1960 and ran through June 1961
Bell	Americans climb Masherbrum First Ascent
Eiselin	*International Exp. climb Dhaulagiri First Ascent*
Kunaver	Yugoslav Exp. climb Trisul II and Trisul III
Kyuya	Japanese attempt Loenpo Gang in Nepal
(leader Unknown)	Japanese Exp. climb Api and Himal Chuli
Walmsley	British climb Nupste First Ascent
Smyth	R.A.F explore/climb on Aling Glacier near Masherbrum
Tyson	Survey in Kanjirobal Himal W. Nepal. Climb Matathumba
Pettigrew	Small team explore Kulu Himalaya of India
Takahashi	Japanese climb Longpo Gang (Big White Peak) First Ascent
Horniblow	Pak-Brit. Forces Exp. Attempt on Khinyang Chhish

Shidei	Japanese-Pakistan team climb Saltoro Kangri, First Ascent
Dyhrenfurth	American Everest Exp., climb SE & West Ridges (traverse)
Ching	*Chinese climb Shisha Pangma from north. First Ascent*
Schell	Momhil Sar climbed by Germans. First Ascent
Pettigrew	Two climbers make First Ascent of Kulu Pumori in Pir Panjal
Mackay	First Ascent of technically challenging Thamserku
Clough	Brits attempt Gauri Sankar
Higuchi	Japanese climb Annapurna South (Ganesh). First Ascent

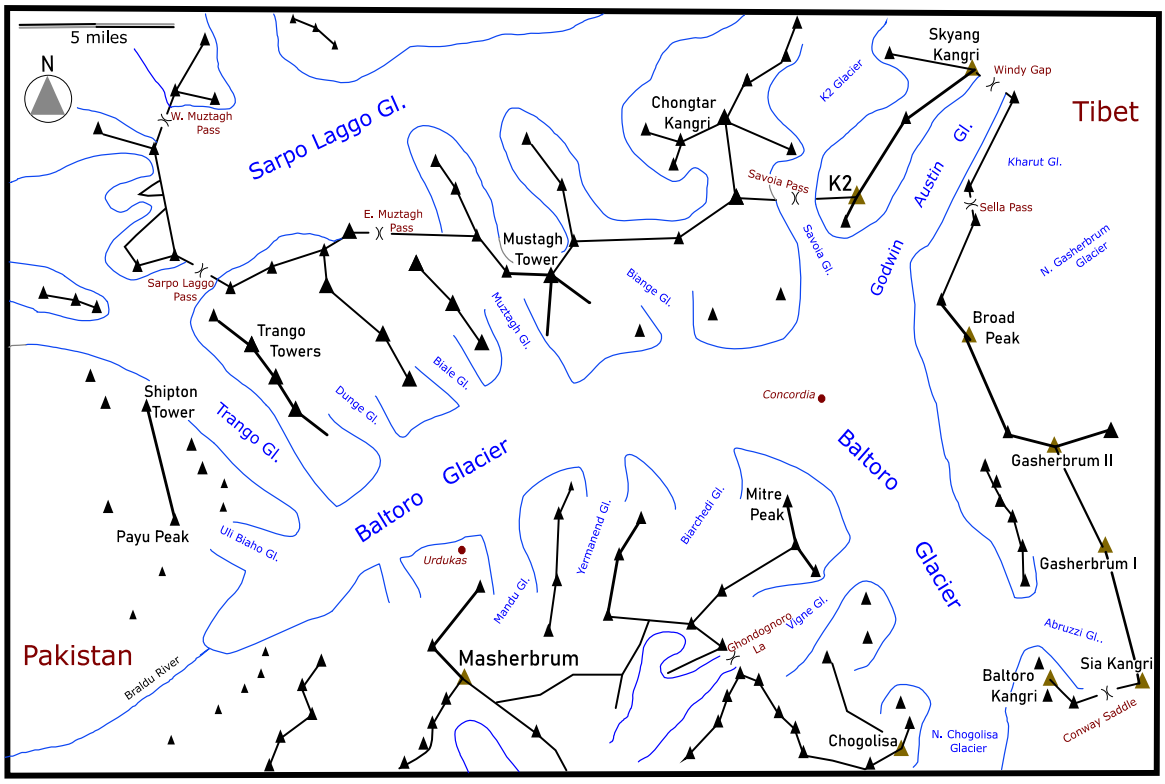

TIMELINE OF EVENTS
Crimean War
1855
Schlagintweit Brothers (1855-1857)
Burton & Speke: Lks Victoria & Tang.
Indian Mutiny
Godwin-Austen
U.S. Civil War
1865
Whymper: climbs Matterhorn
Yellowstone N.P. established
Schliemann: discovers Troy
1875
Stanley: descends Congo River
Nordenskiold: transits NE Passage
Edison: first phonograph
OK Corral Gunfight
Graham Exp: Garhwal, Kabru
Krakatoa erupts-40,000 dead
Koch: Germ Theory
1885
Younghusband: China, Karakoram
Twain: pub. Huckleberry Finn
Younghusband: Alghil, Hunza
Nat Geo Founded
Conway Exp: Hispar-Biafo
Coca-Cola established
1895
Mummery Exp: Nanga Parbat
Nobel Prize established
Curries discover Radium
Boxer Rebellion
1900
Workmans
Queen Victoria dies
Eckenstein Exp: K2
Wright Brothers: powered flight
Amundsen: transits NW Passage
1905
Longstaff: Garhwal, Tibet
S. Hedin: Trans-Himalaya
San Franciso earthquake
Longstaff: Trisul
Dr. Kellas
Model T Ford produced
Longstaff: Siachen Gl.
Scott & Peary: North Pole ??
1910
Duke of Abruzzi: Baltoro Gl.
H.Bingham: discovers Machu Picchu
Amundsen: South Pole
Titanic Sinks
Baily & Morshead: Tsangpo Gorge
De Fillippi: Rimo Gl.
World War I
1915
Lusitania Sunk
Bolshevik Revolution
Versailles Treaty
1920
Visser Exp: Saser Range
Republic of Turkey forms
H. Carter: King Tut's Tomb
1925
Visser Exp: Hunza
First Winter Olympics Held
Mason Survey Exp: Aghil Range
C. Lindbergh: crosses Atlantic
Stock Market Crash
1930
Visser Exp: Saser Range, Turkestan
Int. Kangchenjunga Exp.
Adm. Byrd: flys over S. Pole
Smythe Exp: Kamet
Shipton & Tilman: Nanda Devi Sanct.
1935
Visser Exp: Shaksgam Basin
Anglo-Am Exp: Nanda Devi
Hunt Exp: Peak 36
Bauer Exp: Sikkim
Chapman Exp: Chomo Lhari
Waller Exp: Masherbrum
Houston Exp: K2
Wiessner Exp: K2
1940
World War II begins


Karakoram
Kun Lun Range
Hindu Kush
Gilgit
Aghil Range
K2
Skardu
Nanga Parbat
200 miles
N
Tibetan Plateau
Average Elevation 14,000-16,000 ft
Indus
Srinagar
Leh
Himalaya
1
2
3
TIBET
Siling Lake
TIBET
Indus River
Mt. Kailash
Nam Lake
PAKISTAN
Pir Panjal
Himalaya
Lahore
Nanda Devi
4
Trans Himalaya
Namche Barwa
Yarlung Tsangpo
Lhasa
Himalaya
Himalaya
INDIA
NEPAL
Himalaya
Mt Everest
5
BHUTAN
6
New Delhi
Katmandu
Indian States:
1 Jammu & Kashmir
2 Ladakh
3 Himachal Pradesh
4 Uttarakhand
5 Sikkim
6 Arunachal Pradesh
Gangetic Plain
INDIA
Brahmaputra
Gangetic Plain
Ganga
Myanmar

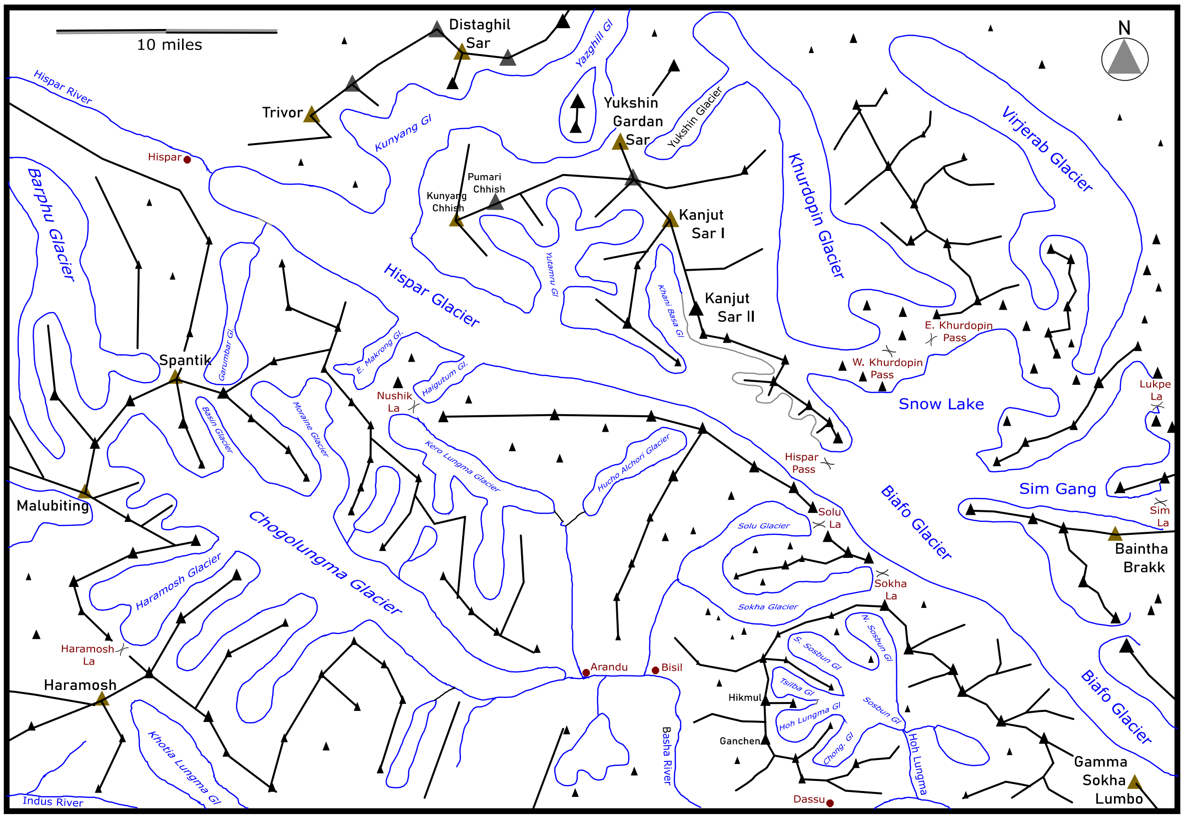
Map 1


20 MILES
N
77° E
76° E
75° E
36.3° N
35.3° N
Tibet
Tibet
Tibet
Yarkand River
Yarkand River
AGHIL RANGE
Shaksgam River
Durbin Kangri I
Aghil Pass
Surukwat Kangri
This area under dispute
Karakoram Pass
Mamostong Kangri
India
Mahashrung
Apsarasas Kangri I
Siachen Glacier
Gyong Kangri
Saltoro Kangri
Line of Control (approx. position)
Sia La
Sia Kangri
Gasherbrum's
Broad Peak
K2
Chogolisa
Pakistan
KARAKORAM
Shyok River
Muztagh Pass
Baltoro Glacier
Masherbrum
Trango Tower
W. Muztagh Pass
Baltistan
Indus River
Latok I
Biantha Brakk I
Biafo Glacier
Askole
Shigar
Skardu
Hispar Pass
Shimshal Pass
Khunjerab Pass
Shimshal
Kanjut Sar I
Disteghil Sar
Kunyang Chhish
Hispar Glacier
Chogolungma Glacier
Spantik
Haramosh
Deosai Plain
HIMALAYA
Bruzil Pass
Astore
Dofana
Nanga Parbat
Sost
KARAKORAM
Hunza
Hunza River
Mintaka Pass
Kilik Pass
Batura Glacier
Ultar
Karimabad
Rakaposhi
Batura Sar
Indus River
Afghanistan
Pakistan
Sakar Sar
Kampire Doir
Gilgit
Indus River
Pakistan

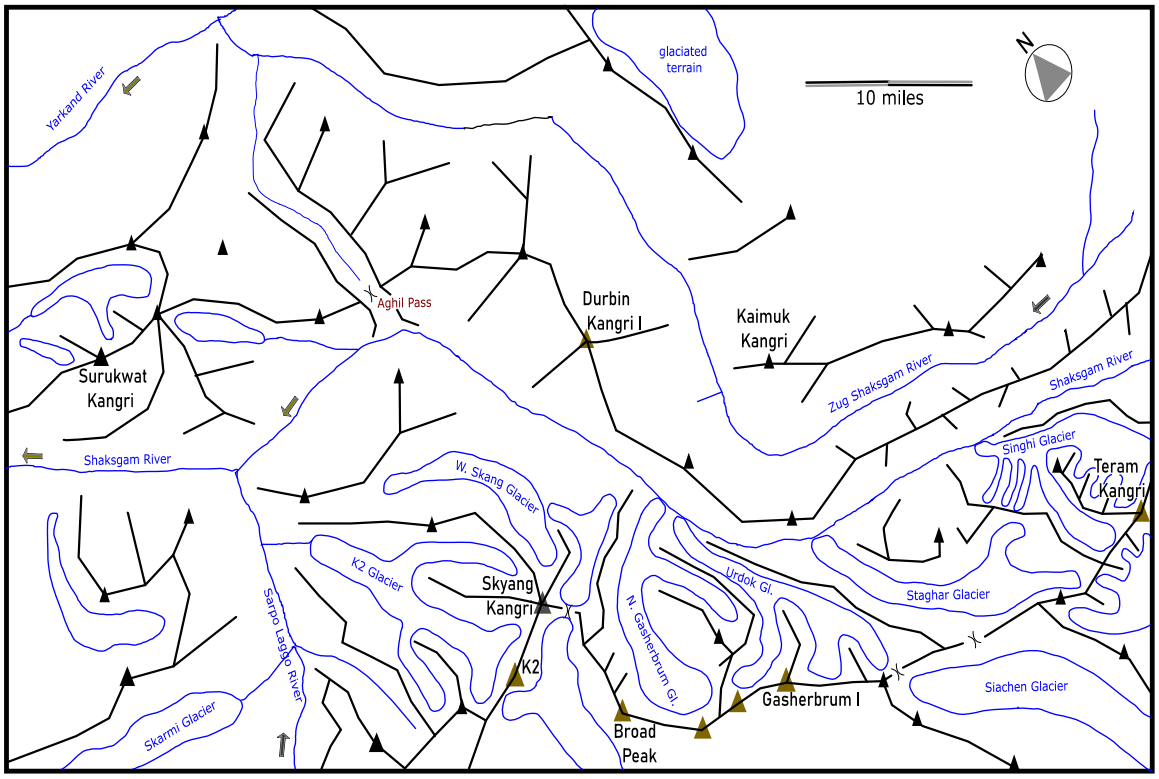
Map 2


5 miles
N
W. Muztagh Pass
Sarpo Laggo Gl.
E. Muztagh Pass
Sarpo Laggo Pass
Trango Towers
Shipton Tower
Trango Gl.
Payu Peak
Uli Biaho Gl.
Braldu River
Pakistan
Dunge Gl.
Biale Gl.
Muztagh Gl.
Mustagh Tower
Blange Gl.
Chongtar Kangri
Savoia Pass
Savoia Gl.
K2 Glacier
Skyang Kangri
Windy Gap
Tibet
K2
Godwin Austin Gl.
Kharut Gl.
Sella Pass
N. Gasherbrum Glacier
Broad Peak
Concordia
Baltoro Glacier
Urdukas
Mandu Gl.
Yermanend Gl.
Biarchedi Gl.
Mitre Peak
Masherbrum
Ghondogoro La
Vigne Gl.
Baltoro Glacier
Gasherbrum II
Gasherbrum I
Abruzzi Gl.
Sia Kangri
Baltoro Kangri
Conway Saddle
Chogolisa
N. Chogolisa Glacier

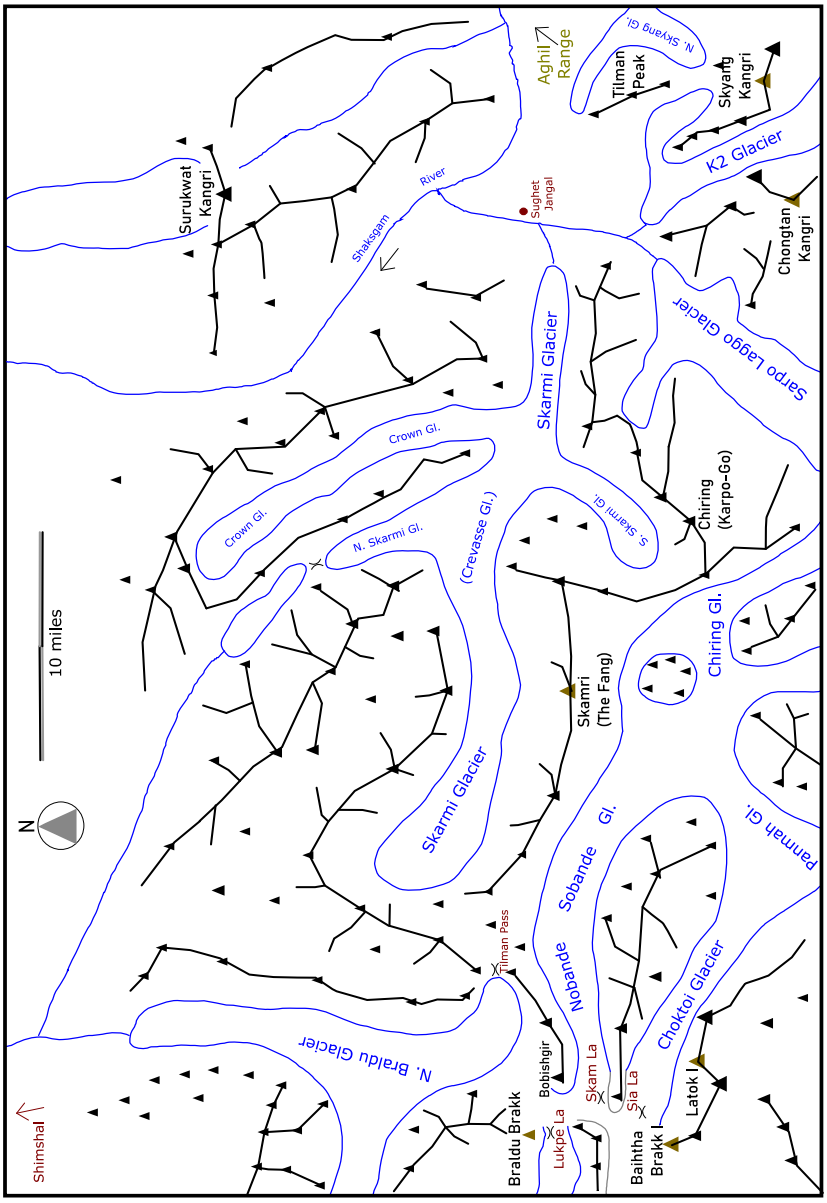
Map 3


10 miles
N
Distaghil
Sar
Trivor
Yukshin
Gardan
Sar
Pumari
Chhish
Kunyang
Chhish
Kanjut
Sar I
Kanjut
Sar II
Spantik
Malubiting
Haramosh
Baintha
Brakk
Gamma
Sokha
Lumbo
Hispar River
Hispar
Kunyang Gl
Yazghill Gl
Yukshin Glacier
Khurdopin Glacier
Virjerab Glacier
Barphu Glacier
Hispar Glacier
Yutamru Gl
Khani Basa Gl
E. Khurdopin
Pass
W. Khurdopin
Pass
Snow Lake
Lukpe
La
Garumbar Gl.
E. Makrong Gl.
Haigutum Gl.
Nushik
La
Basin Glacier
Moraine Glacier
Kero Lungma Glacier
Hucho Alchori Glacier
Hispar
Pass
Biafo Glacier
Sim Gang
Sim
La
Chogolungma Glacier
Solu
La
Solu Glacier
Sokha
La
Sokha Glacier
Haramosh Glacier
Haramosh
La
Arandu
Bisil
N. Sosbun Gl
S. Sosbun Gl
Tsilbu Gl
Hikmul
Hoh Lungma Gl
Sosbun Gl
Ganchen
Chong. Gl
Hoh Lungma
Basha River
Khotia Lungma Gl
Indus River
Dassu

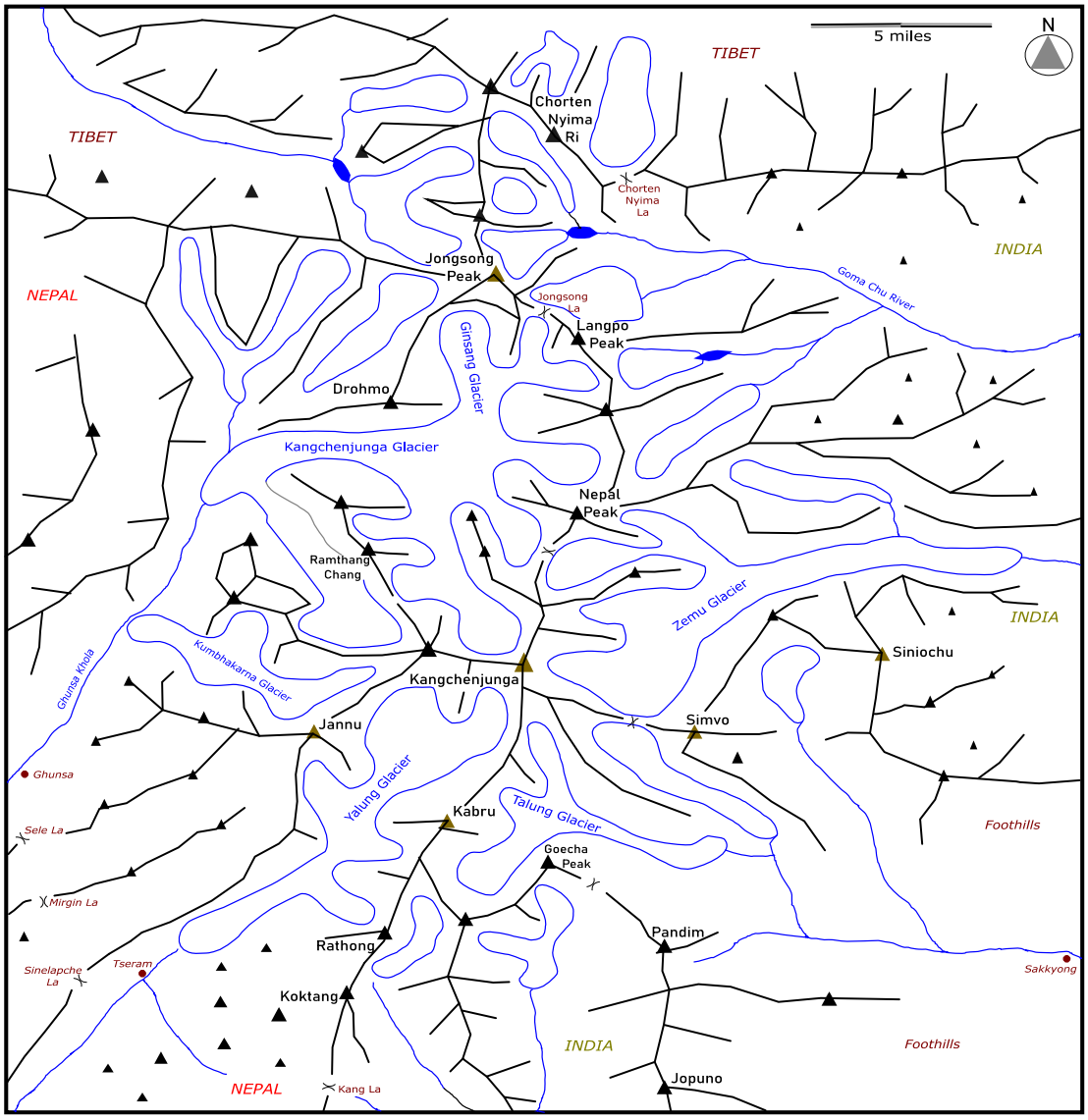
Map 4


Yarkand River
glaciated terrain
10 miles
N
Aghil Pass
Durbin Kangri I
Kaimuk Kangri
Surukwat Kangri
Zug Shaksgam River
Shaksgam River
Shaksgam River
Singhi Glacier
Teram Kangri
W. Skang Glacier
K2 Glacier
Skyang Kangri
Urdok Gl.
Staghar Glacier
Sarpo Laggo River
N. Gasherbrum Gl.
K2
Broad Peak
Gasherbrum I
Siachen Glacier
Skarmi Glacier

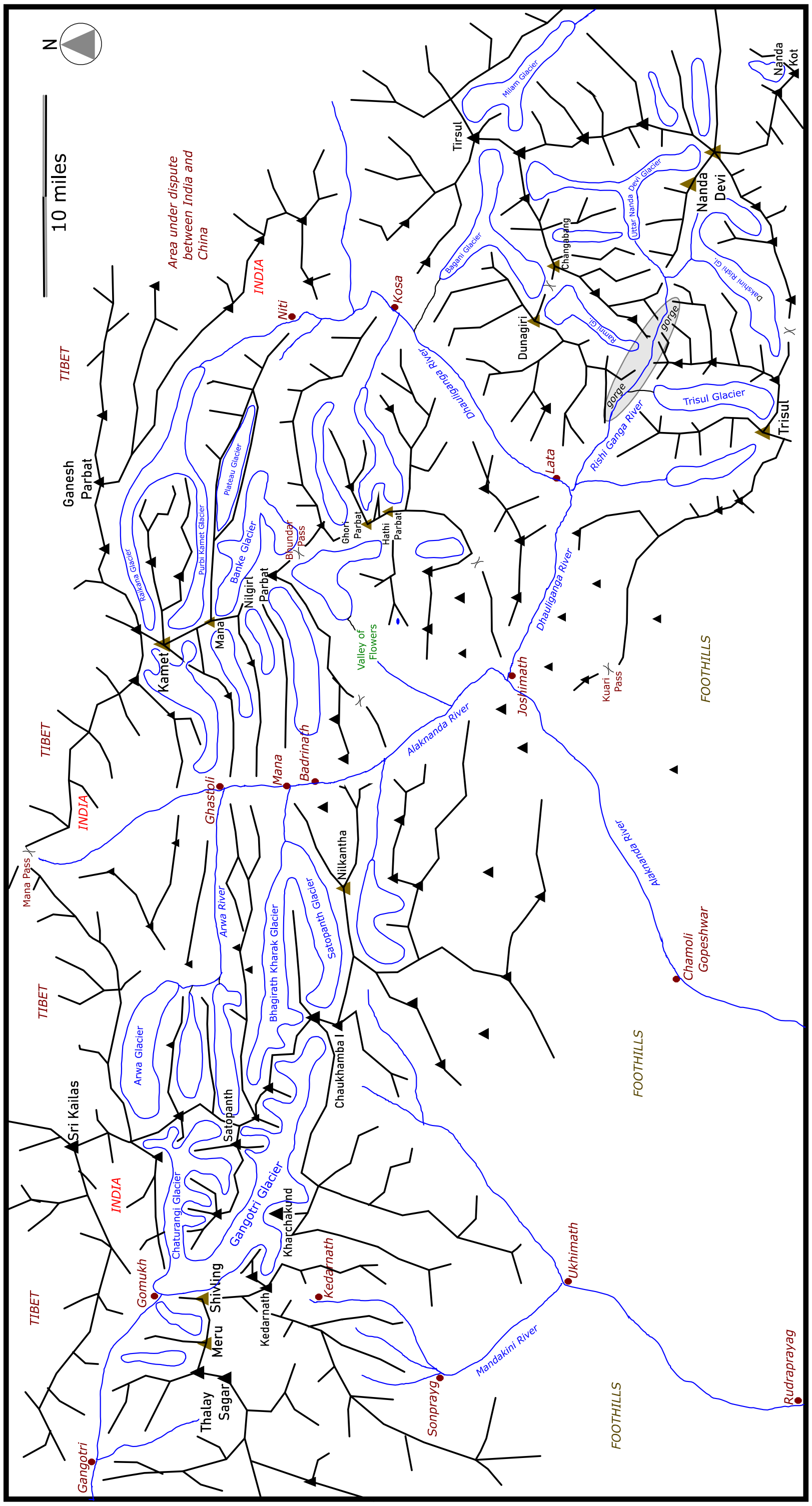
Map 5


Shimshal
N
10 miles
Surukwat Kangri
Shaksgam River
Crown Gl.
Crown Gl.
N. Skarmi Gl.
(Crevasse Gl.)
Skarmi Glacier
Skarmi (The Fang)
Skarmi Glacier
N. Braldu Glacier
Braldu Brakk
Bobishgir
Lukpe La
Skam La
Sia La
Baihtha Brakk I
Latok I
Nobande Gl.
Sobande Gl.
Choktoi Glacier
Tilman Pass
Pammah Gl.
Chiring Gl.
S. Skarmi Gl.
Chiring (Karpo-Go)
Sarpo Laggo Glacier
Sughet Jangal
Aghil Range
N. Skyang Gl.
Tilman Peak
Skyang Kangri
K2 Glacier
Chongtan Kangri

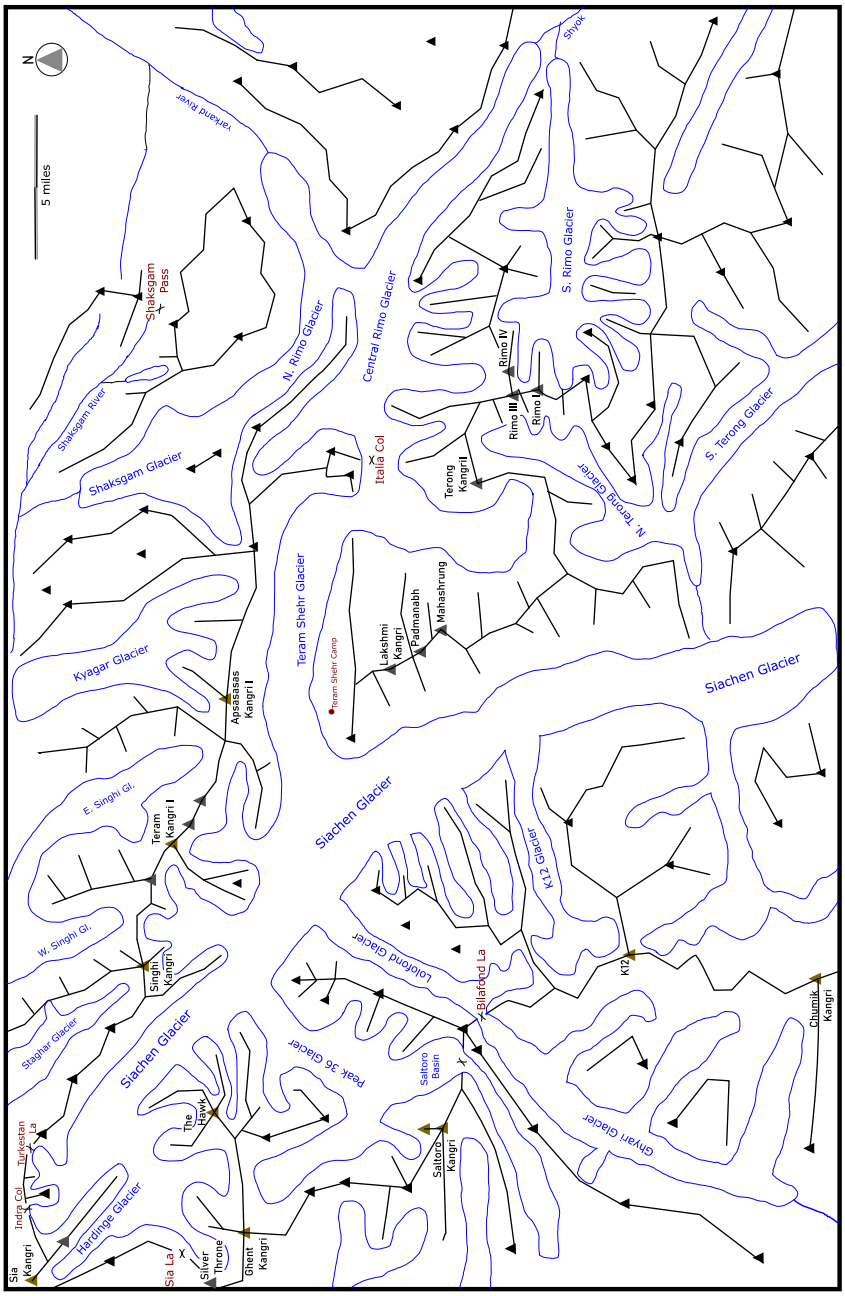
Map 6


5 miles
N
TIBET
TIBET
Chorten Nyima Ri
Chorten Nyima La
INDIA
NEPAL
Jongsong Peak
Jongsong La
Goma Chu River
Langpo Peak
Ginsang Glacier
Drohmo
Kangchenjunga Glacier
Nepal Peak
Ramthang Chang
Zemu Glacier
INDIA
Siniochu
Ghunsa Khola
Kumbhakarna Glacier
Kangchenjunga
Jannu
Simvo
Ghunsa
Yalung Glacier
Kabru
Talung Glacier
Foothills
Sele La
Goecha Peak
Mirgin La
Pandim
Rathong
Sinelapche La
Tseram
Sakkyong
Koktang
INDIA
Foothills
NEPAL
Kang La
Jopuno

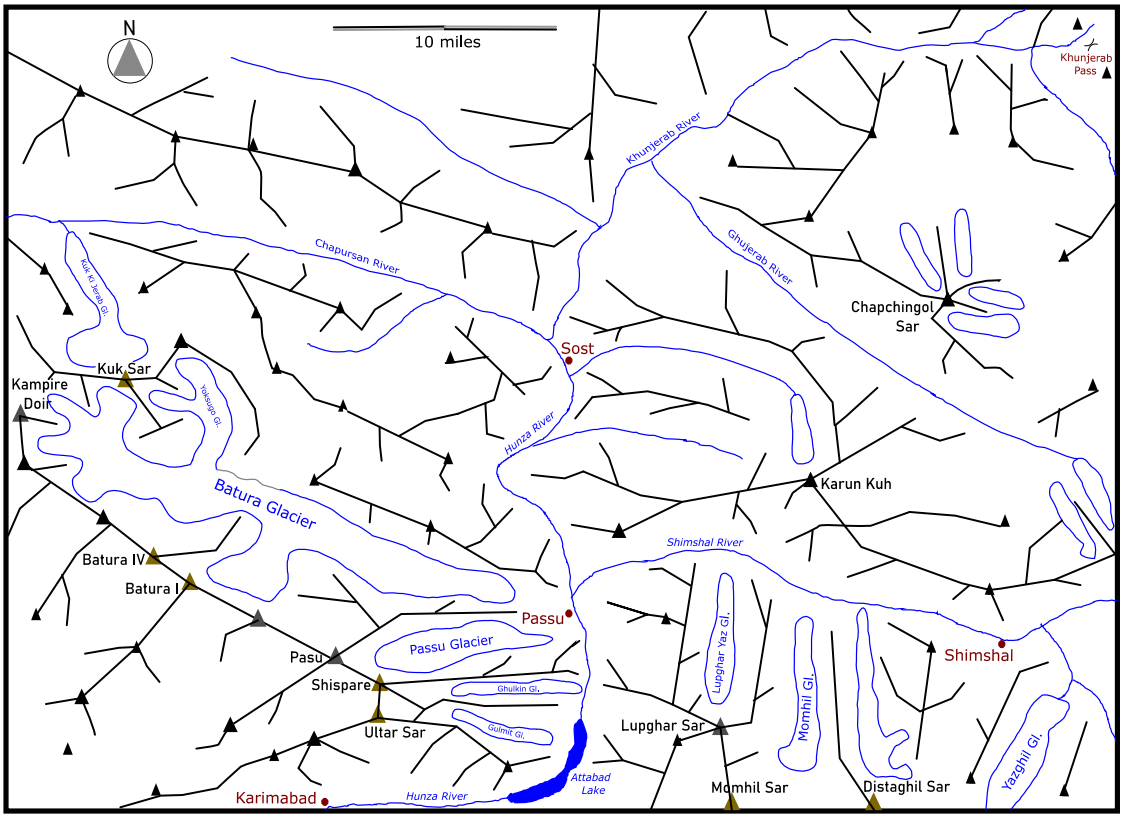
Map 7


N
10 miles
Area under dispute between India and China
TIBET
INDIA
Ganesh Parbat
Kamet
Mana
Nilgirt Parbat
Banke Glacier
Purbi Kamet Glacier
Raikana Glacier
Plateau Glacier
Bhyundar Pass
Ghori Parbat
Hathi Parbat
Valley of Flowers
Niti
Kosa
Dhauliganga River
Dunagiri
Changabang
Bagini Glacier
Milam Glacier
Tirsul
Nanda Devi
Uttar Nanda Devi Glacier
Dakshini Rishi Gl.
Nanda Kot
gorge
Trisul Glacier
Trisul
Rishi Ganga River
Lata
Joshimath
Kuari Pass
FOOTHILLS
Alaknanda River
Badrinath
Ghastoli
Mana Pass
Nilkantha
Arwa River
Satopanth Glacier
Bhagirath Kharak Glacier
Arwa Glacier
Chaukhamba I
Satopanth
Sri Kailas
Chaturangi Glacier
Gangotri Glacier
Kharchakund
Gomukh
Shivling
Meru
Kedarnath
Thalay Sagar
Gangotri
Sonprayag
Mandakini River
Ukhimath
Chamoli Gopeshwar
Rudraprayag

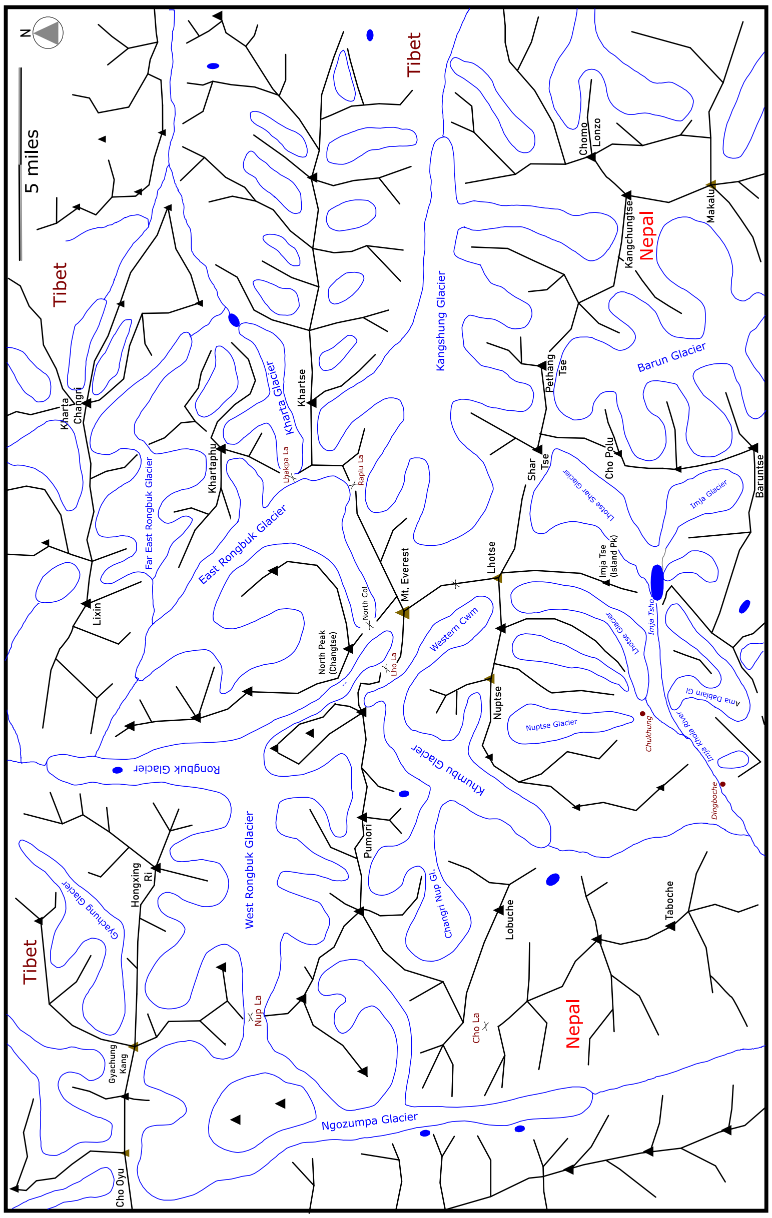
Map 8


N
5 miles
Yarkand River
Shyok
Shaksgam Pass
Shaksgam River
Shaksgam Glacier
N. Rimo Glacier
Central Rimo Glacier
S. Rimo Glacier
Rimo IV
Rimo III
Rimo I
Rimo II
Italia Col
Terong Kangri
N. Terong Glacier
S. Terong Glacier
Teram Shehr Glacier
Lakshmi Kangri
Padmanabh
Mahashrung
Teram Shehr Camp
Kyagar Glacier
Apsasasas Kangri I
Siachen Glacier
E. Singhi Gl.
Teram Kangri I
W. Singhi Gl.
Singhi Kangri
Staghar Glacier
Loloforid Glacier
K12 Glacier
Bilafond La
K12
Chumik Kangri
Peak 36 Glacier
Saltoro Basin
Saltoro Kangri
Gnyan Glacier
Turkestan La
Indrg Col
Sia Kangri
Hardinge Glacier
Sia La
The Hawk
Silver Throne
Ghent Kangri

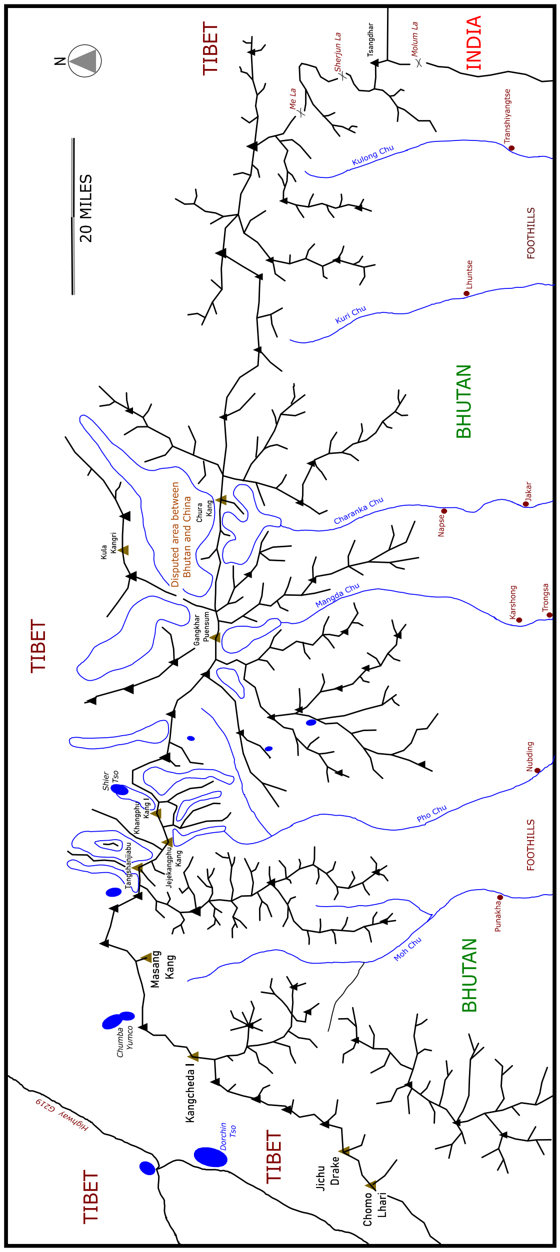
Map 9


N
10 miles
Khunjerab Pass
Khunjerab River
Chapursan River
Ghujerab River
Chapchingol Sar
Sost
Kuk Sar
Kampire Dior
Hunza River
Karun Kuh
Batura Glacier
Shimshal River
Batura IV
Batura I
Passu
Passu Glacier
Pasu
Shispare
Ghulkin Gl.
Lupghar Yaz Gl.
Momhil Gl.
Shimshal
Ultar Sar
Gulmit Gl.
Lupghar Sar
Yazghil Gl.
Attabad Lake
Karimabad
Hunza River
Momhil Sar
Distaghil Sar

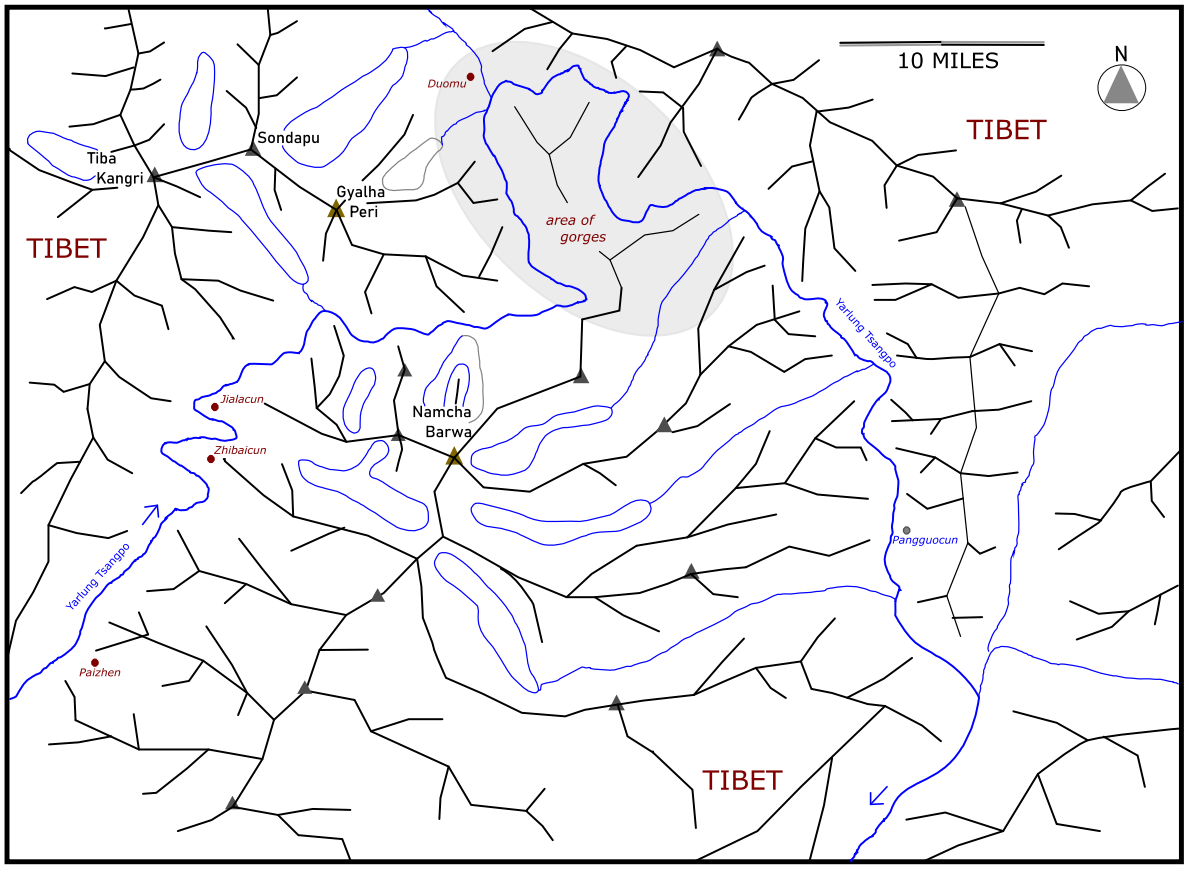
Map 10


5 miles
N
Tibet
Tibet
Tibet
Nepal
Nepal
Cho Oyu
Gyachung Kang
Gyachung Glacier
Hongxing Ri
West Rongbuk Glacier
Nup La
Ngozumpa Glacier
Rongbuk Glacier
Pumori
Changri Nup Gl.
Lobuche
Cho La
Taboche
Khumbu Glacier
Western Cwm
Nuptse
Nuptse Glacier
Chukhung
Dingboche
Imja Khola River
Ama Dablam Gl
Lhotse Glacier
Imja Tsho
Imja Tse (Island Pk)
Lhotse
Mt. Everest
Lho La
North Col
North Peak (Changtse)
East Rongbuk Glacier
Far East Rongbuk Glacier
Lixin
Kharta Changri
Khartaphu
Lhakpa La
Kharta Glacier
Khartse
Rapiu La
Kangshung Glacier
Shar Tse
Lhotse Shar Glacier
Cho Polu
Imja Glacier
Baruntse
Pethang Tse
Barun Glacier
Kangchungtse
Makalu
Chomo Lonzo

Map 11


N
20 MILES
TIBET
INDIA
BHUTAN
FOOTHILLS
Disputed area between Bhutan and China
Kulong Chu
Kuri Chu
Charanka Chu
Mangde Chu
Pho Chu
Mah Chu
Trashiyangtse
Lhuntse
Napse
Jakar
Karshong
Trongsa
Nubding
Punakha
Me La
Sherjun La
Molum La
Tsangdhar
Chura Kang
Kula Kangri
Gangkhar Puensum
Shier Tso
Masang Kang
Chumba Yumco
Kangcheda I
Dorchin Tso
Jichu Drake
Chomo Lhari
Highway G219

Map 12


10 MILES
N
TIBET
TIBET
TIBET
Duomu
Sondapu
Tiba
Kangri
Gyalha
Peri
area of
gorges
Yarlung Tsangpo
Jialacun
Namcha
Barwa
Zhibaicun
Pangguocun
Yarlung Tsangpo
Paizhen

Map 13

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http://blankonthemap.free.fr/1_accueil/index.php?code=20051520

http://www.8000ers.com/cms/ Loads of information on the fourteen tallest peaks on the planet.

http://alanarnette.com This is the site of Alan Arnette, who has climbed extensively in the Karakoram-Himalaya and is very knowledgeable on Mt. Everest. He also provides guidance for those climbers seeking advice on which big peaks to climb.

http://www.alpine-club.org.uk/hi/ Himalayan Index covers many peaks over 6,000 m in Karakoram-Himalaya and beyond.

http://www.mapsofindia.com This is a very good site for coming to grips with all of the Indian states.

https://www.greathimalayatrail.com/about-the-ght/ This is the home of the Great Himalaya Trail.

Cover photo: South side of Tsaurabong 20,981 ft (6395 m) in central Nepal taken from the Myagdi Khola.