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April 11, 2025

Reading: Last Place on Earth, ch.21-32:

1.1 Chapter 21 - Scott Sails On

1. As the Terra Nova sailed to New Zealand and on to Antarctica, how did they find out about the Fram expedition? How did they react?

They found out about the Fram expedition by cablegram. They came to an understanding that Amundsen was challenging them. He was racing them to the Pole.

2. The Terra Nova expedition had settled on ponies for transport. Where were they obtained? Describe how Meares had to transport them to New Zealand.

The ponies were a special cold-weather breed from Manchuria. Meares travelled for five weeks and on three transshipments, but he finally made it to Lyttelton, New Zealand, without losing a single pony or dog.

1.2 Chapter 22 - The Base at Framheim:

1. List the advantages and disadvantages of setting the main Norwegian base, Framheim, at the Bay of Whales, as opposed to Cape Evans (Ross Island).

The main advantages were credited to Amundsen. He diligently planned every detail of their trip. A disadvantage the Norwegians faced was their sled dogs got fat and lazy.

2. What are some innovations the Norwegians created at Framheim? For example, their boots had to be altered four times. What else did they make or build?

They made a new kind of tent by combining their tents into a new shape. It kept in warmth and was less affected by winds.

3. On the depot-laying journey, the Norwegians were creating future stores of food for the return journey from the South Pole during the next season. What sort of safety margins did they assume when deciding how much food and supplies to move to the depots?

Johansen arranged six seals outside in a manner so they could easily access them when needed. They also added 165 liters of paraffin and other supplies they may need. The road was also marked every mile all the way to the 80 degree depot.

1.3 Chapter 23 - Sledging with the Owner:

1. To lay depots, the British team had to get across McMurdo Sound (sea ice). Having constructed their winter hut further South than the Terra Nova, they had to move several tonnes of gear across sea ice. In the end, however, they had to put it all back on the ship, and sail it across. Why?

Part of their road leading from their winter hut had melted into the ocean so they had to move their camp.

2. Discuss the advantages and disadvantages of having a chain of command. For example, when Scott issued orders, they were to be followed literally. Without orders, his men knew not to change plans without consulting the Captain. How did this differ from the Norwegian leadership style?

I think obedience can be really helpful in a crisis. There is no time for a group to think, so if a leader makes all the decisions, it can lead to a faster, safer solution. On the other hand, many members of Scott's team were experts in their field and even if they disagreed with Scott's methods they had to obey his orders. The Norwegian leadership style focussed more on the group's success. Amundsen was open to advice from knowledgeable men in his command.

1.4 Chapter 24 - The Pole Seeker Prepares:

1. Explain the significance of a single point of failure in a complex system. Name several examples from the Norwegian and British expeditions that represented single points of failure.

A single point of failure is a fault in a system where if one component fails, the entire system cannot operate. An example of this in the British expedition is the part of their engine that froze and broke? I know we talked about it in class but I can't remember what its called for the life of me.

2. (a) Describe the effect that the cook, Lindstrom, had on the company morale. (b) What other leadership tricks did Roald Amundsen use to boost morale during the Antarctic night?

a) Lindstrom cooked yummy food with the rations they packed. This small thing brought a great amount of joy to the explorers. He also packed their meals in tins that could be accessed easily in the terrain. He worked very hard to make their lives easier.

b) He liked to prevent quarrels by using meals as bonding time for the men. He thought emotional bonding was very important and drinking together was a sacred act that they participated in once a week.

1.5 Chapter 25 - Wintering at Cape Evans:

1. What forms of polar travel had Captain Scott selected for the journey South? Which was to be the one used ultimately to arrive at the South Pole? What is the significance of this decision?

"Ponies, he announced, were the only reliable form of transport," But ponies could only take them to the base of the glacier. They would have to haul gear and walk for 1,000 miles and do 10,000 feet of climbing.

2. What is your impression of the leadership structure at Cape Evans, given the presence of Navy officers and enlisted Navy sailors? What would you have done differently? What winter tensions existed at Framheim?

It once again used the traditional English chain of command which operates solely on rank and obedience. It does not operate on good ideas or merit but on position which worked out exactly how you would think. A bunch of ponies died and they got scurvy.

1.6 Chapter 26 - False Start:

1. What major error on the part of Roald Amundsen gives this chapter its title? As a result of this error, who had to forgo the South Pole trek, and why?

He had not planned for such cold weather so they had to put off their start by a few days while the English were already on their way.

1.7 Chapter 27 - Scott's Caravan:

1. During this chapter, there are signs of self-delusion in the leadership of Captain Scott. However, in the end, his party does reach the South Pole and travels almost all the way back. How does one recognize the early signs of leadership error? What makes addressing such errors difficult? (Give examples as necessary from the chapter).

I think one of the biggest signs of leadership error is unwillingness to accept advice and then unwillingness to accept responsibility when things go wrong. Scott's rigidity was his biggest fault on these expeditions.

1.8 Chapter 28 - The Devil's Ballroom:

1. What impressions of the Trans-Antarctic mountains do you recall from this part of the Norwegian journey? What kinds of terrain did they face, and how did they overcome it?

The mountains were huge. They said they were bigger than anything they had ever seen. When they first arrived at the base of the mountains, they couldn't see a way to get to them. They had met the ice shelf. Amundsen decided to create another depot at the base of the mountains which was half a mile nearer to the previous one than it should have been but his men agreed it was a better idea to place it before the summit than in the middle of it. The mountains were treacherous, the climb was extremely difficult. The dogs were exhausted and the men couldn't hike as much as they thought they would. Amundsen had climbed these mountains once before but hundreds of miles away.

2. What made fixing the latitude and longitude difficult this close to the pole? Was calculating the longitude worthwhile?

They were on a glacier and the ice moves almost like a liquid.

1.9 Chapter 29 - Man-Hauling Begins:

1. How did Scott's men feel about man-hauling gear up the mountains? Were they able to be honest with the Captain about the risks?

They didn't feel it was the best option. They didn't like that so much of their trip was left up to luck. Scott said the team could not afford a delay.

2. What were the advantages of going up the Beardmore Glacier, as opposed to the Axel Heilberg and Devil's Glacier for the Norwegians?

Deep loose snow on the beardmore made it perfect for skiing.

1.10 Chapter 30 - The Race Won:

1. Describe the meticulous calculations Roald Amundsen and team made to establish the location of the geographic South Pole. For reference, recall the story of Cook and Peary, and the uncertainty of their North Pole navigation.

They took frequent altitudes of the sun for the sake of accuracy. He had intended on bringing a theodolite for the polar observations alone. But he used a sextant instead which was tedious, he had to focus on the artificial horizon from a downward angle, and get the direct image of the sun and its reflection to touch exactly. Cook and Peary both reported to have made it to the North Pole while neither of them actually had.

1.11 Chapter 31 - The Race Lost:

1. After years of planning, 1200 miles of exploration on foot, ski, and sledges, and vastly different start times, what was the final difference in time between the Norwegian and British arrival at the South Pole?

Scott and his men arrived January 17th 1912, 34 days after Ahmundsen and his men.

2. How did scurvy begin to play a role in the trip home for the British? What vitamins did they lack?

They were lacking calories and they were physically weak and in mental distress. They lacked thiamin, riboflavin, and nicotinic acid

Reading: Deep Survival, ch. 5-8:

2.1 Chapter 5 - The Anatomy of an Act of God:

1. In this chapter, two brothers and a friend set out to climb a rock face in Yosemite. With regard to the plan, what begins to go wrong? Why is the group unable to act on the information indicating the plan is becoming increasingly dangerous?

First, someone steals their food, finding food took 2 hours and delayed them from 4am to 6am. Instead of changing their plans and doing another climb, they took the 3 mile hike to Cathedral Peak. “They saw what they wanted to see and disregarded what they knew: that high terrain makes for rapid changes in weather” pg. 87, I think this was their biggest mistake, ignoring what the world was communicating to them because their minds were made up on something different.

2. For example: (a) why is cotton called “death fabric” by park rangers? (b) What is St. Elmo’s fire?

a. Cotton isn’t waterproof and it isn't insulating.

b. Rob and Steven had developed a powerful secondary emotion, it was instinct between the two of them and they helped anchor David's rope and saved his life. (it's also a great movie)

2.2 Chapter 6 - The Sand Pile Effect:

1. In general terms, describe what a power-law effect is in nature. Why does a sand pile with a steady rate of new sand on top collapse regularly, even though basic physics does not predict when it will collapse?

The power-law effect states that a change in one variable will cause a proportional change in another variable. A pile of sand will reach a state of criticality and it causes a chain reaction. As more sand falls, more sand slides off the pile. The science of a grain of sand cannot predict this.

2. What is meant by the term "normal accidents?" On mountains like Mt. Hood, for example, there are accidents that occur predictable, despite safety preparations. How does the sand pile effect explain this?

A normal accident or "system accident" refers to a self-organized criticality dovetail. This system accident involved two effects: the mechanical system that the climbers were using and the psychology and physiology that contributed to the accident.

2.3 Chapter 7 - The Rules of Life:

1. Consider this quote from the chapter: "It is well documented that co-pilots aren't likely to challenge pilots in aircraft cockpits and sailors aren't likely to challenge captains, sometimes with fatal consequences. Experienced climbers may be reluctant to challenge others with experience ... doctors won't challenge doctors." How do the documented accidents in this chapter connect to the results of the South Pole expeditions?

There is a level of pressure on the leader to keep the group safe, without them, the whole group is doomed. But questioning them is the responsibility of their team. The relationship is relatively symbiotic except it relies much more on the leader.

2.4 Chapter 8 - Danger Zones:

1. Consider the following paradox: surfing can be a beautiful and joyful experience, but also extremely dangerous, depending on the conditions. What kind of experiences are necessary to do it safely? Recall, for example, how the Hawaiian lifeguard and his family interacts with the author.

I think most outdoor activities should be done with safety in mind because there is so little environmental control. I grew up near Halfmoon Bay which is where Maverick waves are surfed. There is a reason only 2 people have died surfing 60+ foot waves: they are all safe. They are all surfers who know what they're getting into surfing waves that big so they behave accordingly. I don't think safety ruins the fun, I think understanding the risks makes for a better experience. You can opt out, or you can opt in and take the leap knowing what could happen.

2. Compare the experience of the lifeguard to that of the CEO who survives winter blizzards for three days in Squaw valley, California. What characteristics helped him survive? How could he have avoided the experience in the first place?

The CEO was in very good shape and he had been a marine fighter pilot. His character was that of a fighter, he had the will to survive what most people wouldn't on top of the physical ability. Even though he had limited knowledge on his environment, his drive to live got him through it. On the other hand, the lifeguard's knowledge of the surf helped him survive, he could tell something was going to go wrong right before it happened. I think he would have been found a lot faster if he wore a leash when surfing since it can float him to the surface but he survived nonetheless.

Scientific Studies:

1. What is so striking about the discovery of life beneath the Ross Ice shelf? How far away from the sea ice does life extend? How was this life discovered?

Under 900m of ice, life was discovered in an environment that was void of light. These creatures were discovered on an exploratory survey of the Ice Shelf. It was previously believed no life existed in these conditions anywhere on earth.

2. What hunting techniques do Antarctic orcas display that demonstrate teamwork and social organization?

They work together to create a wave that flips seals sleeping on sheets of floating ice.

Neutrino Physics in Antarctica and Greenland:

4. List some of the astrophysics experiments located in Antarctica and Greenland. Why are they located there, and for what are they searching?

They shoot neutrinos at each other in these deep tunnels in the ice to see what happens when they hit each other. Every time they interact, they name the event. There is nowhere on earth with clear ice of that size where they could perform these same experiences.

5. What achievements are attributed to the IceCube Neutrino Observatory in the last 10 years?

They have detected many high energy neutrinos! They're getting a lot closer to understanding them more deeply.

Paleo-climatology with Antarctic Ice Cores:

7. Describe the process for measuring global average temperature using ice cores from deep boreholes in Antarctica. What gases or elements are used to make the measurements? How is this temperature measurement calibrated, using contemporary data?

They remove ice cores from deep ice in Antarctica and then they observe snowfall layers within the ice. This can tell them global temperature through the concentration of Carbon and Nitrogen in the ice and snow.

Bonus: Solitude and Leadership:

1. **Reflection on Leadership:** What makes a good leader, according to the essay "Solitude and Leadership?" (a) Reflect on one's ability to pass exams, versus think independently. (b) How does the example of Gen. David Patreus play a role in this reflection? (c) What advantage to leadership decisions is afforded to those who filter out information that is ultimately unimportant? What forms of information do you think are the most important?

a. The ability to pass an exam is really the ability to memorize and recall information as well as follow directions. These are not the traits of an independent thinker. The standardization of education was originally conjured to ensure every person gets the same quality of education but it is now working to ensure every person has the same knowledge and strength of character. A strong workforce is not built on free thinkers and rule-breakers; it is built on obedience and subservience as well as liminal, surface level knowledge of only relevant information. (i.e. programmers learn to program, journalists learn to write, factory workers can work an assembly line).
b. I think General Patraeus' legacy reinforces my understanding of the article. Comprehension and performance academically does not a leader make.

c. The problem with this school of thought is each person's mind works differently. The ability to sort information is valuable but doing so is robbing others of doing the same. Categorizing important and useless information is also assuming others' minds operate in the same way as yours.