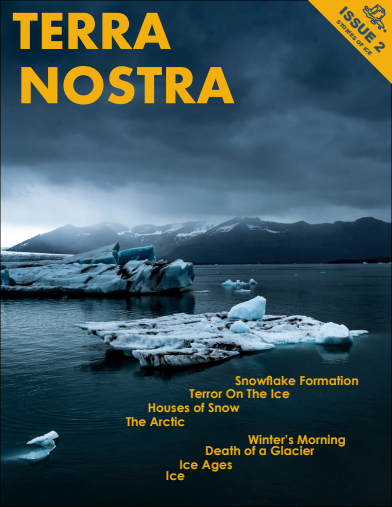


TERRA NOSTRA




ISSUE 2
STORIES OF ICE

Snowflake Formation
Terror On The Ice
Houses of Snow
The Arctic
Winter's Morning
Death of a Glacier
Ice Ages
Ice

Contents

Foreword	2
Houses of Snow	3
The Arctic	5
Winter's Morning	5
Death of a Glacier	7
Snowflake Formation	9
Ice ages	11
Ice	12
Terror on the Ice	13

LOOK OUT FOR THESE!



Foreword

First of all, I would like to thank everybody that submitted ideas for the name of this magazine and those took the time to vote for which was the best. In the space of a week, 154 of you voted and a winner was chosen. For those of you that skipped the title page, the winning name chosen was Terra Nostra (Our Earth in Latin) suggested by Effie W in Year 7. It is a great title that gives us a lot of scope to explore a range of themes in future issues.

But for now let's focus on this issue!

Stories of Ice, the second issue of Terra Nostra, is both a celebration of our coldest climates and a warning of what the future may have in store for their continued existence. Inside this issue, you will find articles from staff on disappearing glaciers, how Igloos work, and a little about HMS Terror's fateful journey. You will also, for the first time, find some articles written by pupils. There are a couple of short factual pieces on the Arctic and the Ice Ages but also a wonderful short piece of fiction on what it is like to wake up after a snow fall. Remember, this magazine is a great way to share your writing skills with your peers!

Shameless plugs aside, I hope you find the second issue of Terra Nostra as interesting to read as it has been to write.

Mr Green

23 Mind Brew

80 Terra Nostra

32 Lux

19 Notitia



HOUSES OF SNOW

There's a really great scene in Star Wars where a half frozen Luke Skywalker is forced to spend the night inside a recently slaughtered Tauntaun by his, shoot first and ask questions later, friend Han Solo. Whilst Luke and Han survive the night gently warmed by the beast's smelly insides, they had all the material needed around them to construct a much warmer abode. If you've seen the movie you will probably be thinking that there's nothing around them on which except for mountains of snow and you're right. However, snow has been used for several thousand years by people in the real world to construct dwellings that allow them to survive in the harsh climate of the Arctic circle.

What is this magic dwelling? Why the Igloo of course! In this article we're going to explore just how several tons of frozen water can be made into a nice cozy living space.

Before we even begin to discuss how an Igloo works we need to understand what happens when we get cold. We've all experienced being cold at some point in our lives. You don't need to be a polar explorer to have felt the nip of a cold wind on a winter's day. However, what if I told you that there's no such thing as cold? Whilst it might feel like the cold is seeping into your bones, in reality the opposite is happening. You feel cold because the rate at which you give off heat into the environment has increased. The greater the difference between your body temperature and the air surrounding it the faster you radiate it. In effect you cool at a much faster rate in colder air. When your body temperature drops below 35C that's when the trouble really starts. When you sink below this number your heart, nervous system and other organs can't work normally and you can be considered Hypothermic.



You might be starting to wonder why the animals that live in colder climates don't struggle so much with heat loss. The answer to this is that they have evolved some clever ways to get around it. Polar bear fur is one of the greatest adaptations to the environment in any animal. Each individual hair is hollow, water repellent and elastic! This means that Polar Bears don't lose a lot of body heat as energy drains away from the body. In fact Polar Bears are so good at insulating themselves from the cold that several laboratories are currently in the process of replicating it for our own winter survival gear. Pretty neat!

Anyway, now that we have an idea of how getting cold works we can get back to the igloo. Igloos need to work just like the fur of a Polar Bear by making sure that the heat lost from our bodies isn't lost to the environment. Yet snow is tricky. Freshly fallen snow is powdery and doesn't stick together well enough to make nice solid blocks. Whilst solidly compacted snow is far too heavy to lift. What you need to build an igloo is snow that is neither too loosely laid or too tightly packed. In fact, snow for an igloo should be light enough to carry but firm enough to be cut with a saw. Yes. A saw. Igloo blocks are not shaped from loose snow. They are literally cut like giant sugar cubes from the ground beneath your feet. These blocks contain just the right mixture of snow and air to be structurally sound whilst still being a great insulator.

Traditionally the blocks needed to build an Igloo are three feet long, fifteen inches high, and eight inches thick. To make a full sized Igloo you would need around one hundred and fifty of these blocks! That's a lot of sawing and hauling before you've even got to building.

Unlike in a lot of pictures, Igloo domes are not semi-spherical. Instead Igloos are constructed to form a catenary arch (which is a fancy way of saying a slightly more elliptical arch). This arch is one of the strongest natural arches in architecture. It naturally balances the weight of the material used to construct it by converting gravitational strain into compression along the arch (making it stronger). This is why well built Igloos don't collapse on those inside them.

The first circle of blocks is laid flat but every other block on top of this modified so that a spiral of blocks forms. This allows the circles to gradually become small and forms the domed shape of the Igloo. Igloos also usually have a small hole left in the top to ensure that the space within is well ventilated. Without this hole there is a very real chance that those within might suffocate from their own breathing causing a build up of Carbon Dioxide!

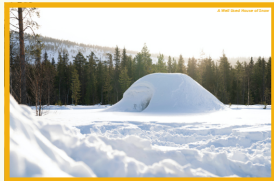
Inside the Igloo a raised shelf is constructed for people to sleep on. This clever little addition also helps to keep

the occupants warm. Cold air is denser than warm air so it sinks below it. By having a raised platform the occupants are raised above the layer of trapped colder air and are more able to take advantage of the air warmed by their bodies.

Igloos are so efficient at trapping the heat given off by a human that temperatures inside an Igloo have been recorded at 14C whilst those outside were as low as -45C!

So why doesn't the Igloo melt? Good question! The heat capacity of water is much higher than that of air. What this means is that it takes a lot more energy to heat the same amount of water than it does the air. As well as this the snow is also giving off energy into the surrounding air. As long as it stays cold outside then the inside of the Igloo will only melt very slowly. As soon as the air outside the Igloo warms up then the amount of melting increases very quickly. This is why you don't see Igloos in the summer!

So there you have it. If you ever find yourself trapped on an icy world don't sleep inside your Tauntaun. Build an Igloo instead.





THE ARCTIC

By Ellie W., Year 7

The Arctic is the polar region of the northernmost point on the Earth. Many people have already explored the icy continent. Unfortunately, the ice caps are melting because of global warming causing climate change. We currently lose arctic sea ice coverage at a rate of almost 13 percent per decade according to NASA. From climate change the British Antarctic Survey predict that by 2035 the Arctic will be completely ice-less.

So, what inhabits the Arctic? There are land mammals for example: Polar Bears, Arctic Foxes, Arctic Hares, Caribou and many more. The birds consist of: eagles, Arctic Terns, Puffins and Snowy Owls. There are also plenty of sharks and seals. Polar Bears are suffering from global warming as their home is slowly melting away.

Here is a quote from Anne Widcombe describing what she felt about the Arctic when she visited: "The Arctic has huge glaciers, frozen waterfalls and floating ice. This is scenery on which man has left no mark, which has stayed unchanged for centuries, wild, bleak, hauntingly beautiful; it is a part of God's creation we have made no effort to tame."

So overall we should really try to make an effort to help stop climate change, the little things you can do can be a big help. The way people describe the Arctic makes it sound wonderful and we should try and hold on to it while we can.



Two polar bears playing



WINTER'S MORNING

By Alice B., Year 9

"Beep-beep, beep-beep, beep-beep". I woke to the sound of my infuriating alarm. My blurry eyes opened a crack. Reaching out and searching blindly for my glasses, I put them on blinking sleepily and read 6:00 Am. It was Saturday morning and I fully intended to sleep in, but last night I had obviously forgotten to switch off my alarm. In the fluorescent green light of the screen, reaching out with one of my fatigued hands, I gave the wretched piece of plastic an overly aggressive smack on the snooze button.

With a contented sigh I closed my eyes and snuggled back into bed. Just as I had relaxed back into sleep and was falling into a dream. The relentless piece of garbage decided to pipe up again. "Beep-beep, beep-beep, beep-beep". That was the last straw, "arghhhh!" I jolted upright, my eyes flashed open and I turned scowling at my alarm. I picked up the persistent thing with my right hand and chuckled it with considerable force across the length of the room. "Beep-beep, beep-beep, beep-beep!" It's beeping seemed to become shriller and more distressed as it got closer to its inevitable fate. The alarm crashed into the wall and pieces of plastic shattered everywhere. "Good riddance!" I spat fervently.

As much as I would have loved to stay in bed all day, I was completely, inevitably, awake. I got up and wrapped a blanket around my shoulders. It was a very cold winter's day. I made myself a hot cup of coffee, milky with one sugar. I drank deep. Each sip was like a tidal wave of warmth crashing through my body. As I held the mug close to my face gently warming my cheeks. It steamed up my glasses which I then wiped with my sleeve. With this new found clarity in my sight the window in my room caught my eye. Well it wasn't really the window itself but what it was so beautifully framing. A glistening blanket of white snow was draped over the town. Tiny intricate snowflakes were

highlighted by the crisp morning light, each one falling slowly to the frozen ground. I could see children playing in the street throwing snowballs at each other and laughing away. "How wonderful," I thought to myself. Putting aside my rude awakening I felt optimistic about the day ahead.

I moved slowly through my morning routine. I was grateful that my first task greeted me with a deluge of warm water. A thick fog of steam filled the room. While washing my hair I began singing various carols and Christmas songs. They weren't exactly what you would call in tune but they put a festive smile on my face. When I got out of the shower, I wrapped myself in a large, fluffy towel and ringed out my dripping locks. Greedily, I snuck a second quick peek out of the window at the gorgeous frost covered scene outside. I proceeded to fling open my wardrobe and drawers. I'm not a girl with a particularly good dress sense so I began to rifle through my clothes with a clueless expression on my face. I snatched the first things my hands came into contact with (dark blue jeans and a

black knitted top). I hoped that in combination with my coat, gloves, hat and scarf I would be perfectly toasty in the icy streets. Struggling into my clothes, I began to hum the melody of 'The holly and the ivy.' My favourite Carol. I surprised myself at how my mood could change at the drop of a hat at the mere sight of snow.

As my humming evolved into singing, I let the lyrics wash through me and soon I felt a wide grin appear on my lips. I practically pranced across the room to my dressing table and began to rip through my hair eagerly with the old tattered brush that lived next to my mirror. I realised I had no idea where my phone was. I started searching around the unorganised room. After locating my phone (which was in my sock drawer), I got ready to leave the house. I'd be the first to admit that I have many flaws but vanity is certainly not one of them. So, with a final glance in the mirror, taking no particular pride in my appearance, I decided that I looked mildly presentable. With a shrug, I skipped out of the room almost giddy with excitement. Nature has created a magical wonderland for me to explore.

The View from a Window After Heavy Snow Fall





DEATH OF A GLACIER

Picture the scene. You've spent a fine autumn day hiking in the Swiss Alps and you've come across a beautiful crystal blue lake. Feeling the weight of your boots and pack pressing down on you, you decide to take a rest. Everything is calm and peaceful for a while but before long other people start to join you. They come in ones and twos to begin with but before you know it you're surrounded by a crowd of over 250 people. Many of them appear to be dressed in black and carrying flowers. The drone of 3.6m long alphons begins to resound as the crowd falls silent. You might start to wonder what has drawn so many strangely dressed people here? You might, quite reasonably, be a little bit afraid.

This rather strange scene did in fact occur on the 22nd September 2019 in the Swiss Alps at the foot of the Pizol Glacier. Although looking around you, you wouldn't realise there was a glacier there at all. In fact, the few thin sheets of ice that cling desperately to the sides of the mountains barely cover an area of four football fields. The strangely dressed people you would have seen are climate activists there to hold a mock funeral for the glacier's death. In doing so, they will cause a minor media sensation a day before the United Nations climate summit in New York City.

This rather strange procession made public what was up until then the very private deaths of Swiss glaciers. 6% of Switzerland is covered in lakes and glaciers but evidence is suggesting that the amount of glacial coverage is on the decline. Since 1850, Switzerland has lost more than 500 mountain glaciers to melting. In the last 5 years alone, Swiss glaciers have lost 10% of their volume. This is a greater loss than any measured period in the last 100 years. When you consider that most

models predict a 50% loss of glaciers in the European Alps by 2050 regardless on drastic climate control you can start to appreciate the issue. Unaddressed, some glacial models predict that the glaciers of the European Alps could have lost 90% of their volume by 2100.

So how does a glacier die?

It's best if you imagine a glacier as a set of scales. On one side of the scales you have the mass a glacier gains by accumulating new snowfall. On the other you have the amount of ice the glacier loses (ablates) to processes like melting, calving or avalanches. If the amount of ice a glacier loses is greater than the amount it gains then the foot of the glacier will retreat. If the amount of accumulation is higher than the amount of ablation then the foot of the glacier will advance down slope. Like most good sets of scales glaciers are incredibly sensitive to change. Therefore they advance and retreat in response to the yearly variation in climate.

If you can cope with adding a second analogy to your mental model you can also think of glaciers as rather large slaps and slides. This is because glaciers are constantly moving down slope under the force of gravity. Most glaciers move at a speed of around 25cm per day but there's a lot of variation. Some speedy ice masses have been recorded moving up to 30m per day! If you've ever been on a slip and slide you might know that there's a constant stream of water flowing down it. This helps your body to overcome friction and travel speedily down the slope. The same thing can happen in a glacier where ice at the bottom melts and forms a layer of lubrication. When this happens glaciers can very quickly shift towards losing a lot of mass.

Now that's a lot of theory so let's look at why the loss of glaciers is important.

First of all, we have to take a trip to the seaside. Why? To talk about sea level rise of course! Glaciers store water as ice on land. This keeps it out of the rivers and ultimately the ocean. The United States Geological Survey have claimed that if all of the ice on land was to melt and run into the oceans there could be as much as 70m of sea level rise. This is enough to flood every coastal city on the planet.

Perhaps, we should be looking to go somewhere up high instead?

So let's head into the mountains and look at the impacts of glacial loss there. Currently, glacial melting feeds water into many of the world's rivers. The largest store of frozen water outside of the Greenland and Antarctic ice caps is the Himalayas. The glaciers here feed seven major Asian rivers: the Ganges, Indus, Brahmaputra, Thanlyin, Yangtze, and Yellow rivers. To put that into context, over 1.6 billion people rely on Himalayan glacial melt water to provide for their needs. If these glaciers experience catastrophic melting then the livelihoods of 1.6 billion people is at threat. The consequences of such an event is unthinkable. Water shortages on a scale never seen before in human history would present challenges that most societies are ill-equipped to deal with.

But don't worry, it isn't all doom and gloom. In order to save our glaciers we are going to have to tackle our emissions problem. Currently, the average global carbon emissions for a person is 4.8 tonnes. There is a direct connection between a person's wealth and the amount of carbon emissions they are responsible for. So the actual average emissions for a person living in the UK is slightly above this average of 5.3 tonnes because we are reasonably wealthy. If you want to seriously tackle climate change we need to slash our personal emissions dramatically. In order to keep global temperature rise below 2 degrees centigrade it is projected that every single person on the Earth will have to cut their emissions to 1.5 tonnes.

So how do we do this?

The easiest methods of cutting your carbon footprint benefit both your health and your wallet. By driving less, eating more locally produced food and only buying products you need you can dramatically lower your personal emissions. For every mile you walk or cycle instead of driving you save 0.15 kg of carbon emissions. According to the Carbon Trust, a single new cotton T-shirt is expected to be responsible for 15kg of CO2 over its lifetime. So before you buy it, ask yourself if you really need it!

To leave you where we started, it is a bright August day in 2019 and 100 people have gathered at what was once the foot of Iceland's Okjökull glacier. Amongst the activists you'll find university lecturers, scientists and Iceland's Prime Minister. It is a sombre affair. A stark reminder of the fragility of the frozen giants.

A bronze letter to the future is laid upon the bare bones of the Earth. It reads:

"In the next 200 years all our glaciers are expected to follow the same path. This monument is to acknowledge that we know what is happening and what needs to be done. Only you know if we did it."

Is this a message of hope or a warning? It's up to you to decide.





SNOWFLAKE FORMATION

Have you ever taken the time to look at a snowflake? To zoom in as close as you possibly can? To study its intricate patterns of branches and leaves? If you have, you've probably witnessed it melt away to nothing in the fragment of a moment. They are temporary works of art crafted by nature's delicate hand.

Shedding off our romanticism and putting on our lab coats we might want to examine just how nature pulls it off. So what are the processes that determine the formation of a snowflake?

Let's start with good old liquid water. After all, every snowflake starts off as a drop of water vapour hanging around in the atmosphere. To turn into an ice crystal this relatively warm mass of moist air has too cool down. This happens particularly quickly if the wind drives a warm air mass into a cold one. At the front where the two air masses meet, water vapour cools very rapidly forming droplets. However, it's not quite that simple. In order to form the droplets the water vapour requires something to condense on. Most often these are suspended particles of dust and pollen. To give you an idea of the amount of water floating about up there, a single water droplet has a diameter of around a hundredth of a millimetre and each cubic meter of cloud will contain about 100 million of those droplets!

The aforementioned dust and pollen nuclei also have a secondary function essential for ice crystals to form. Pure water doesn't actually freeze at zero degrees centigrade. In fact, pure water can be super cooled to a temperature of around minus forty degrees before becoming ice. The dust and pollen nuclei are therefore vital because they raise the freezing point of the individual droplets. Water droplets around a nucleus begin to freeze at around minus six degrees centigrade. However, freezing doesn't happen at the same rate amongst all the droplets. The size of the

nuclei and the range of temperatures across the cloud leads to the water freezing gradually over time.

Once a droplet has frozen into the core of a snowflake the magic begins to happen. As the cloud continues to cool and lose energy, more water vapour condenses back into liquid water. This newly liberated water condenses onto the already frozen droplets. This allows the crystal structure to grow and the snowflake's branches to develop. For a single large snowflake to grow, up to one million cloud droplets must condense onto the icy core!

As the snowflake develops it gains a lot of mass from all the additional water vapour being added. At some point the balance between the force of gravity and the forces keeping it suspended tips in gravity's favour. When this threshold is inevitably crossed, the snowflake falls from the cloud to the ground.

One snowflake does not a blizzard make. So just how many snowflakes fall a year? If you were to do the maths it would appear that a million billion snowflakes fall every single second of every year. This is a bit of a rough guess as nobody is quite sure how much snow falls in a year and every flake is slightly different.

A single snowflake in snow clouds and from the ground



A range of hexagonal rain, drizzle, sleet and hail crystals showing hexagonal symmetries



“See the river flow
In a long unbroken line
On the field of snow.”
-Boncho



ICE AGES

By Bonnie W-T, Year 7

There have been five major ice Ages in the history of our planet. The first was over 2 billion years ago, the most recent began 3 million years ago and has not yet stopped. We are living in an Ice Age! Currently we are in a warm period that started about 11000 years ago.

At the height of the Ice Ages, the ice was more than 12000ft thick as ice sheets spread across Canada, Scandinavia and many other countries. The sea level dropped by more than 400ft and the average temperature dropped by 12 degrees centigrade, and in some places, it dropped by 40 degrees centigrade.

Now, up to 750 billion tons of ice is melting every year, this is due to global warming. That's the same as 10 Olympic size swimming pools of ice melting every second!

How ice forms. Source: <https://www.nasa.gov>



There's no much water and ice around today (is there to imagine a world without it?)



ICE

By Darcy H, Year 9

Ice. All I could see as I looked around was a white blanket of ice covering the ground below. Like a mirror, it reflected the sun creating a dazzling ray of light. Yet, every summer the sun would shine a little too bright and then this magnificent sheet of ice would melt away leaving a soft green landscape that stretched as far as the eye could see. Food was scarce in the summer months and my cubs and I would have to fight for survival. I looked out onto the barren landscape, my eyes glinting in the sunlight. I detected a small movement about 10m away. I looked back at my four cubs - they were buried deep in happy dreams. I edged closer. I could just make out the thin silhouette of a white hare. I drew closer until I was less than a meter away. I took a careful step but the hare sensed my presence and made to run. I leaped forwards, narrowly missing it.

I sighed and returned to my cubs. They were tossing and turning in their sleep. I heard a sudden crack to my left. I looked around to see part of the icy ground slide into the water revealing the green, spongy surface below. I glanced up at the sky - it was almost night. I sighed as I watched yet another sheet of ice disappear into the blue sea. I looked down at my cubs, wishing that this world wasn't the one that they had to grow up in. As the sun sank leaving the moon to watch over us until it rose again, I remembered how it hadn't always been like this. There was a time when it was colder. That was a better time before, a time before humans.

Melting glacial ice makes some amazing colour contrasts



It will surely be a kinder landscape





TERROR ON THE ICE

In May 1845, Sir John Franklin and 129 souls set out to try and find the fabled Northwest Passage. His two ships, HMS Erebus & HMS Terror, had a long history of polar service and were specially fitted out to cope with the extremes of weather they may encounter. Their hulls were reinforced with iron and their crews were young and skilled. Franklin's expedition did not want for supplies either, having well over 3 years worth of food aboard. Every eventually was prepared for, and yet not one man would survive the crushing cold of this nightmare journey.

The ships spent the winter of 1845 safely inside the Lancaster Sounds at Beechey Island (Northern Canada). After the ice retreated they returned to sea, spending most of the summer of 1846 exploring south through the Peel Sound and into the Victoria Strait. It is here where they ran into serious trouble.

Ice floes in the Victoria Strait are thick and rarely recede all summer long. By September 1846 both ships found themselves icebound, imprisoned just to the Northwest of King William Island. Little could they have known that the grip of the ice would not relinquish them for over a year and a half.

On June 11th 1847, Sir John Franklin perished. The cause of his death is unknown but we can assume that after 9 months enduring the harsh conditions the situation had deteriorated dramatically.

By the time April 1848 rolled around 24 men had died. The rest of the men had at some stage or another abandoned the ships to attempt to make their own way across the ice to safety. Some, like those under the command of Francis Crozier, tried to make their way some 700 miles across the frozen wastes to known fur trading posts. The last known communication of this group was discovered in a cairn of stones erected on King William Island. After this point, the story is a mystery.

For eleven years after the disappearance, rescuers searched in vain for survivors. In total 30 expeditions were mounted to search for and rescue any survivors. These were financed by the Admiralty and Lady Franklin. Whilst they came across abandoned camps, scraps of clothing and the bones of the dead, they never saw a living soul. Tales from the Inuit of starving men pulling overloaded sleighs are probably mark the last time any of the crew was spotted alive.

Perhaps, more gruesome, is the ample evidence of cannibalism discovered from the examination of the bones the rescuers discovered. This fact shocked the rather sensitive Victorian public. Charles Dickens even went so far as to write a series of articles showing that cannibalism was not something that happened often in survival situations and especially not when those survivors were British. Whilst he was wrong, in many cases, the evidence brought back by the rescuers was simply ignored.

The whereabouts of the two ships was unknown for many decades until in 2014, HMS Erebus was discovered wrecked in shallow water to the south of King William Island. This is where Inuit testimony had last placed the ship after its initial loss. The reluctance of the rescuers to trust the Inuit may have led to a greater loss of life. Two years later, HMS Terror was also discovered in a large bay nearby. It is so well preserved that it is now believed that HMS Terror was not crushed by the ice as believed. Instead, it is now thought that the ship was carried 40 miles south by the ice and then sank slowly after being released.

So what did happen aboard those two ships?

In 1981, the University of Alberta did some forensic testing on the bones recovered from King William Island. This testing showed that high levels of lead were present in the bodies of the men. This was corroborated by evidence provided from the bodies of three crew members buried on Baffin Island returned in 1984. This led the researchers to the conclusion that lead poisoning may have been a major cause of death aboard the ships. However, during this period Britain was still an industrial powerhouse. Therefore, lead levels were much higher in the cities and in those that came from them. Just because a few of the bodies showed high levels of lead in their systems it did not mean the entire crew was equally affected.

A much more interesting question is why did those aboard starve? When the ships left Britain they had ample supplies of food. Between them the ships carried around 40,000 kg of flour; 30,000 kg of salt beef and pork; 8,000 cans of preserved meat, vegetables and soup; 500 kg of tinned pemmican; 4,000 kg of lemon juice; 90 kg of pepper; 3,000 kg of tobacco; 4,000 kg of chocolate; and thousands of litres of wine and spirits. There was supposed to be enough food aboard for 3 years. This poses the question of where did it all go?

It has been suggested that a deficiency in vitamins and minerals may have influenced the crew's decision to leave the relative safety of their ships. Such a deficiency can lead to compromised decision making as the brain is not able to function as effectively. Often, those affected are likely to panic and make unsound decisions. Perhaps, it is not unrealistic to assume that the crews failed to ration their resources appropriately and as a result used them up too quickly. Once the situation had become too desperate to recover, only then did they try to save themselves.

It is unlikely that we will ever truly know what happened to the Franklin expedition. The discovery of the well preserved HMS Terror will, of course, shed some light on those final months but it will not do much to tell us what it was like to haul a sled across the ice with no hope of rescue. Perhaps, the story of the crews of HMS Terror & HMS Erebus is best left a mystery. Sometimes the truth is worse than the stories.



HELP WANTED

THE NEXT ISSUE OF TERRA NOSTRA
IS THEMED SONGS OF THE SEA

IF YOU WANT TO GET INVOLVED
SEND YOUR PHOTO OR WRITING
TO

j.green@theislandfreeschool.org

OR SUBMIT A PIECE VIA THE
GOOGLE CLASSROOM

PIECES MUST BE A MAX OF 800 WORDS

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