Unit focus: Explorers
Text focus: Information Text

STAGE 4

Explorers Of The Deep

You might think that there isn't much of the Earth that is yet to be explored. Humans have climbed the highest mountains, crossed deserts and journeyed to the poles. They have even travelled into space and walked on the moon. However, there is one part of our planet that remains relatively unknown: the depths of the world's oceans.

Just how deep are we talking?

The deepest part of the ocean is called the Mariana Trench. It is in the middle of the vast Pacific Ocean near the Mariana Islands. The deepest part of the Mariana Trench reaches about 11km below the surface of the sea! This means that Everest would fit under the water here with plenty of room to spare.

What's it like down there?

As you go deeper and deeper under the surface of the ocean, it gets very dark. This is because no sunlight can penetrate this far. Once you get to an area like the Mariana Trench there is no light at all. The lack of sunlight also means that the deep ocean is very cold. An even bigger challenge is pressure. The water pushes down so hard that, if you were to go to the very bottom of the trench, it would feel like 100 elephants were sitting on you! Not very pleasant! Surprisingly, there are creatures that live in these challenging conditions. In fact, if you want to look for 'aliens', you'd be better off exploring down here than up in space. Down here, far from the sunlight, there are strange animals lurking. For example, the angler fish which lures unsuspecting victims into its waiting jaws using a light dangling from its head!

Can we explore the deep ocean?

The first people to venture into the deepest part of the Mariana Trench – called the Challenger Deep – were Don Walsh and Jacques Piccard in 1960. It was another 50 years until someone repeated the journey. Since 2019, there has been a flurry of new descents. However, it is still an incredibly challenging adventure. Submersibles (underwater vehicles) need to be incredibly strong so they are not crushed by the pressure. New materials have been created to help with this. The construction needs to be perfect so there are no weak joins or faults. The vessels are packed with equipment to keep

passengers alive and to take measurements and recordings. They are certainly not designed for comfort! Exploring the deep is certainly not for the fainthearted. However, for those who want to find new, unexplored places, the ocean floor still holds many secrets.

RETRIEVAL FOCUS

1. Where is the Mariana Trench?
2. How deep is the Mariana Trench?
3. What is the biggest challenge of exploring the deep ocean?
4. When was the first descent to the bottom of the Mariana Trench?
5. What is the name for the deepest part of the Mariana Trench?

VIPERS QUESTIONS

V	Find and copy a word which means *very big*.
E	Why does the reader compare the pressure to elephants sitting on you?
E	Why is the word *aliens* in inverted commas?
V	What does the word *flurry* tell us about recent deep-sea exploration?
S	Would you like to explore the deep ocean? Why or why not? Use information from the text to justify your answer.

Isabella Bird

Explorer Isabella was a traveller, writer, photographer and naturalist. She was even the first woman to be elected into the Royal Geographical Society. These were big achievements for a Victorian woman, especially someone who started life as a sickly and fragile child.

Isabella was born in 1831 in Yorkshire. She was the daughter of Reverend Edward Bird and Dora Lawson. She had a younger sister Henrietta and the two were close. Her father's job as a Vicar meant that the family moved around a lot when Isabella was young. She never went to school but instead learnt from her parents and from books. Her father loved botany (the study of plants) and so Isabella was taught to love and appreciate the natural world around her. Her parents also raised her with a keen awareness of the wider world and a sense of right and wrong. They were strongly opposed to the slave trade which still went on at this time.

Isabella suffered from poor health. She had a problem with a spine and also suffered from headaches and difficulty sleeping. Doctors advised that fresh air and exercise would help her. In 1950, she had an operation on her back. However, her health was still poor. Doctors recommended a sea voyage so that Isabella could benefit from breathing in the healing sea air. Isabella therefore jumped at the chance to travel across the ocean to America. In 1954, she spent several months travelling around The United States and Canada. When she returned home, she wrote about her experiences in a book called An Englishwoman in America, the first of many books about her travels.

In 1972, Isabella visited Australia and then went on to Hawaii. She spent six months in Hawaii, climbing the volcanic peaks. Then she returned to the United States where she journeyed 800 miles on horseback through the Rocky Mountains, enduring harsh conditions and isolation. Victorian women were expected to ride side saddle, with both legs on the same side of the horse. However, Isabella learnt how to ride like men did, with one leg either side of the horse. This might have been unusual, or even shocking for a woman, but she was surprised to find that her back stopped hurting when she rode this way. In 1978, Isabella's travels took her to Asia where she explored China, Japan, Korea and beyond. However, in 1880, Isabella's sister died and,

distraught, she returned home. She married John Bishop, a doctor. Sadly, he died only five years later. Isabella decided to train as a medic. She once more returned to her travels, this time with the plan to try and make a difference to the places she visited. She set up hospitals, including one in India which she named after her husband.

Isabella Bird died shortly after returning from Morocco in 1904. She was 72, but, despite her advanced years, she had not stopped exploring. In fact, she was even planning her next trip back to China when she died.

RETRIEVAL FOCUS

1. Where was Isabella Bird born?
2. When was Isabella Bird born?
3. What was unusual about Isabella's horse-riding?
4. What made Isabella Bird return home in 1880?
5. Where was the last place Isabella Bird travelled to?

VIPERS QUESTIONS

V What does the phrase *keen awareness* mean?

E What phrase suggests that Isabella was enthusiastic about leaving home?

E What phrase suggests that Isabella was enthusiastic about leaving home?

V What does *distraught* mean?

S Put these events from Isabella Bird's life in order:

Isabella's sister died.

Isabella travelled through the Rocky Mountains.

Isabella wrote her first book.

Isabella had surgery on her back.

Isabella trained as a medic.

Unit focus: Explorers
Text focus: Instructions

STAGE 4

Make Your Own Compass

Whether you're in the mountains or on the water, it's important to stay on course. Otherwise, you could end up back where you started, or worse, completely lost. The compass has been essential part of an explorer's kit for many years.

A brief history of navigation

Early sea-faring explorers used fixed landmarks or other clues to help keep them on track. They could use features of the coastline to help them as long as they stayed close to shore. They even followed seabirds. The position of the sun also helped guide them and, at night, the position of the stars. Innovations such as sextants and astrolabes used the position of the stars to determine latitude. However, these relied on clear skies.

Compasses were first used in China over 2000 years ago. Now they are a vital piece of equipment for every adventurer or explorer. They cannot tell you where you are but they help navigators because they will always point north. They also work no matter what the conditions or time of day.

Today, GPS is used to help with navigation. Unlike compasses, these can pinpoint your location incredibly accurately using satellites orbiting the Earth. However, compasses still have their place. After all, technology can fail if a battery runs out for example. A compass is reliable. It is also light and easy to pack.

Believe it or not, you can even make your own version of a compass using household items.

Equipment

- Needle or paperclip;
- A flat circle of cork or foam (ask an adult to help you cut);
- A bowl filled with water;
- A magnet.

Method

1. To magnetise the needle or paperclip, run the magnet over it in the same direction at least 20 times. Do not rub the needle to and fro as this will not work.

2. Float the cork or foam on the surface of the water and carefully place the needle on top. Make sure the magnet is not too close as this may interfere with your compass.

3. The needle will rotate on the surface of the water. If this does not happen, you may need to repeat step 1 using more strokes of the magnet.

4. Wait for the needle to settle. It will now be oriented north to south.

5. To decide which end is pointing north, compare it to another compass, to the north star or to a known location. You can then locate the other points of the compass.

How it works

A compass relies on magnetism. Magnetism is an invisible force. You can feel it when you hold two magnets close to one another. You will feel either a pulling force as the magnets' north and south poles attract each other, or a pushing force as the two magnets repel each other. But did you know that the Earth itself is a giant magnet? This means that the magnetised needle of a compass is pulled by the Earth's magnetic force too. The needle aligns itself with the Earth's magnetic field so that it always points north to south.

SUMMARY FOCUS

1. Use information from the text to complete the table about different navigation methods. One has been done for you.

	Disadvantages or limitations
Navigation by fixed landmarks on the shoreline	**Sailors couldn't venture into open water.**
Navigation by the stars	
Compasses	
GPS	

2. Which of these best sums up the compass?

   - Compasses are a centuries old device which has now been replaced by newer technologies. 2.
   - Compasses are important because they are a lightweight and trustworthy way for people to navigate in all conditions.
   - Compasses are important pieces of equipment which tell explorers or adventurers where they are so that they don't get lost.

3. According to the text, what might cause the homemade compass not to work?

4. In your own words, summarise how compasses work.

VIPERS QUESTIONS

V Find and copy a word which is close in meaning to *inventions*.

R Where were compasses first used?

V It will now be oriented north to south. What does *oriented* mean in this sentence?

V What does aligns *itself* mean?

E Who would read this text. Explain how you know.

A science-loving child An explorer A scientist

Shackleton's Edurance Found

9th March 2022.

107 years after it sank, Shackleton's ship – The Endurance – has finally been discovered. South African icebreaker Argulhas II left Cape Town on February 3rd with a team from the Falklands Maritime Heritage Trust. Blizzards, shifting sea ice and the extreme cold made for a challenging journey. Once the ship reached the last known location of the Endurance, remote control submersibles were used to search the ocean floor. The famous wreck was finally found resting at a depth of 3008m beneath the surface. Remarkably, photos and footage reveal that the ship remains relatively intact. Images show the wooden stern emblazoned with the name Endurance. The ship's wheel and deck are encrusted with sea life but otherwise look as if Shackleton just left.

The Endurance left London on 1st August 1914, just as World War I was breaking out in Europe. The aim of the expedition was to be the first team to cross the continent of Antarctica. The plan was to set off from the Weddell Sea to the South Pole and then continue on to the Ross Sea. It would be a treacherous journey of 1800 miles. However, the ship became trapped in the sea ice and any hope of completing the land crossing were soon lost. Instead, the new objective was to make it out alive. The stricken men spent 9 months trapped on board the ship waiting for the ice to melt. However, in October 1915, the ice began to crush the ship. The men were forced to abandon ship and make camp on the sea ice. In November, they watched the ship disappear beneath the ice.

In an epic tale of survival, Shackleton and his 27 men endured months on the shifting ice. Their supplies were diminishing and they had no way of communicating with the outside world. Eventually, when the ice began to melt, Shackleton and five of his men sailed for help in a lifeboat rescued from the Endurance. Two years after departing England, all of the men were rescued.

The Endurance is protected under the Antarctic Treaty. It will remain undisturbed in its final resting place on the sea floor. However, the discovery is sure to bring this story of courage and determination to new audiences and inspire a new generation. Scientists have also used the expedition as an opportunity to gather data about this remote and precious part of the world. This will help contribute to research about climate change.

VOCABULARY FOCUS

1. Find and copy a word which means *undamaged*.
2. What does *emblazoned* mean?
3. What does *encrusted* mean?
4. 'Instead, the new objective was to make it out alive.' What word could replace the word *objective*?
5. What does the word *epic* suggest about the story of the Endurance expedition?

VIPERS QUESTIONS

R What was the name of the ship which located the Endurance?

S Summarise the challenges faced by the men on board the Endurance.

S Put the events of the Endurance expedition in order:

The Endurance sank.

The Endurance became trapped in sea ice.

The Endurance set sail for Antartica.

The men abandoned the Endurance.

The crew waited for the ice to melt and then sailed for help.

R Why won't the shipwreck be removed from the ocean floor?

I Why might the story of Shackleton and his crew inspire people?

Unit focus: Explorers
Text focus: Information Text

STAGE 4

The Search for the Northwest Passage

Europe has traded with East Asia since ancient times. The journey east through Asia was long and difficult. Many explorers dreamed of finding a sea route west from the Atlantic to the Pacific Ocean. This was called the Northwest Passage. However, finding a way through the maze of channels, strewn with icebergs and deep in the Arctic Circle took 400 years to be realised. Along the way many men (and yes, I'm afraid it was only men) attempted the journey only to be lost, kidnapped or even subject to mutiny!

15th Century: John Cabot

Cabot was the first to look for a northwest passage. Christopher Colombus had sailed west to try to get to Asia and had instead landed in America. Cabot speculated that the route through was further north. He set off from Bristol in 1497. He reached land and believed he had succeeded in reaching Asia. Sadly not – he was somewhere on the east coast of Canada. He claimed the new land for King Henry VII and returned home. The following year, he sailed west again. However, what happened to him on that trip is a mystery. Perhaps the ships were lost at sea? We do not know for sure.

16th Century: Martin Frobischer

English sailor Martin Frobischer made three attempts to find the Northwest Passage. On his first voyage in 1576, he rounded Greenland and reached Baffin Island. He sailed westwards believing he had found an entrance into the Northwest Passage. However, it was only a deep bay now called Frobischer's Bay. This expedition hit trouble when five of his men were kidnapped by Inuit and never seen again.

17th Century: Henry Hudson

Hudson made several attempts to find the northwest passage. During his final 1611 voyage, the ships became locked in sea ice for many months and they ran low on food. When the ice thawed, his men – demoralised and hungry – wanted to return home. Hudson insisted they continue. The men mutinied and Hudson, his son and seven men were cast adrift in a small boat. They were never heard from again.

18th Century: James Cook

Celebrated explorer James Cook was lured out of retirement by the hope of finding the northwest passage. Unlike previous expeditions, Cook started in the Pacific Ocean. He sailed along the south coast of Alaska looking for a way through but

found only bad weather and ice. He sailed back to Hawaii to restock and rest. Cook was killed in a disagreement with the Hawaiians before he could try again.

19th Century: Sir John Franklin

In 1845, Sir John Franklin departed England in search of the Northwest Passage. His two ships – the HMS Erebus and HMS Terror - were last seen by two whaling ships north of Baffin Island. Then nothing. For over thirty years, search parties hunted for the missing sailors. The trouble was that no one knew where to look. Little by little clues were found which told the story of what had happened to the men. They appeared to have died one by one from the cold, malnutrition and even lead poisoning. The two ships were finally found in 2014 and 2016.

20th Century: Roald Amundsen

Roald Amundsen set off in 1903. He travelled in a small boat with a crew of 6 men. As a result, he could navigate the shallow waters which would have stopped larger ships passing through. He had tears in his eyes as he realised he'd reached the Pacific Ocean. It had taken until 1906 but the northwest passage had finally been found.

VOCABULARY FOCUS

1. What does speculated mean?
2. Which word in the section on Henry Hudson tells us that Hudson's men had lost confidence in their mission?
3. What does mutinied mean?
4. What is another word for lured?
5. 'However, relations with the natives soured'. What does soured mean in this sentence?

VIPERS QUESTIONS

E What words or phrases in the introduction have been chosen suggest that it was hard to find a way through the Northwest Passage?

I What impression might we get about Henry Hudson based on this text?

R What was unusual about James Cook's attempt to find the Northwest Passage?

R Where did James Cook die?

R What helped Amundsen achieve the goal of sailing through the Northwest Passage?

Answers - Explorers Of The Deep:

1. In the Pacific Ocean near to the Mariana Islands.
2. About 11km
3. The pressure
4. 1960
5. The Challenger Deep

V: Vast

E: To help understand the pressure in a light-hearted way. To give a sense of just how big the pressure is. Most people won't understand just how high the pressure is but people know that elephants are heavy and 100 elephants would be very heavy.

E: Because they aren't really aliens (they're not from space) - they are only aliens in terms of being very strange and unfamiliar.

V: There has been a lot, all of a sudden.

S: Possible answers: Yes, because there are strange creatures and its one of the few places which humans haven't really explored so there's lots to discover; No, because it is cold and dark and the pressure is so high that it is very dangerous. The smallest fault in the submersible could be disastrous.

Answers - Isabella Bird:

1. Yorkshire
2. 1831
3. She did not ride side saddle but with one leg either side of the horse.
4. The death of her sister
5. Morocco

V: An intense or strong understanding or knowledge about something

E: jumped at the chance

E: (enduring) harsh conditions (and isolation)

V: Extremely sad/upset

S:

Isabella's sister died. 4

Isabella travelled through the Rocky Mountains. 3

Isabella wrote her first book. 2

Isabella had surgery on her back. 1

Isabella trained as a medic. 5

Answers - Make Your Own Compass:

1.

	Disadvantages or limitations
Navigation by fixed landmarks on the shoreline	**Sailors couldn't venture into open water.**
Navigation by the sun or stars	**Depends on clear skies**
Compasses	**Doesn't tell you where you are, just which was is north.**
GPS	**Technology can fail/ battery could run out.**

2. Compasses are important because they are a lightweight and trustworthy way for people to navigate in all conditions.
3. The compass may not work if you rub it to and fro with the magnet, rather than in one direction; if you don't rub it enough times; if the compass is too close to magnetic interference.
4. Compasses work because the needle on the compass lines up with the Earth's magnetic field and therefore can show which way is north.

V: Innovations

R: China

V: Facing in the direction of

V: Lines up with

E: A science-loving child. It contains clear directions and information for children (e.g. Ask an adult to help). It does not expect lots of scientific or technical knowledge or equipment.

Answers - Shackleton's Edurance Found:

1. Intact
2. Decorated in large letters
3. Covered with
4. Goal, aim, target
5. It suggests that it was long, heroic and challenging.

R: Argulhas II

S: They were trapped in shifting sea ice, their ship was crushed and sank, they ran low on food, they could not communicate with the outside world to call for help.

S: The Endurance sank. 4

The Endurance became trapped in sea ice. 2

The Endurance set sail for Antartica. 1

The men abandoned the Endurance. 3

The crew waited for the ice to melt and then sailed for help. 5

R: It is protected under the Antarctic Treaty

I: They didn’t give in, they all survived against the odds, they showed courage and determination.

Answers - The Search for the Northwest Passage:

1. Had an idea or a theory about something
2. Demoralised
3. Revolted or rose up against a leader, took over command
4. Tempted, enticed, coaxed, attracted
5. The relations went bad/unfriendly/unpleasant

E: Describing it as a ‘maze of channels’, ‘strewn with icebergs’, ‘deep in the Arctic Circle’

I: He was determined and/or stubborn – he made several attempts on the Northwest Passage and didn’t want to give up despite running low on food. Also accept references to being reckless or uncaring/ not listening – he ignored his men’s desire to return home.

R: He started in the Pacific Ocean.

R: Hawaii

R: His ship was small and could therefore navigate through the shallow water.