
Merchant Taylors' School

Geographical MAGAZINE

ARTICLES ON

The Bosphorus | The Limpopo
Rivers of Ice | Local River Chess

& MANY MORE

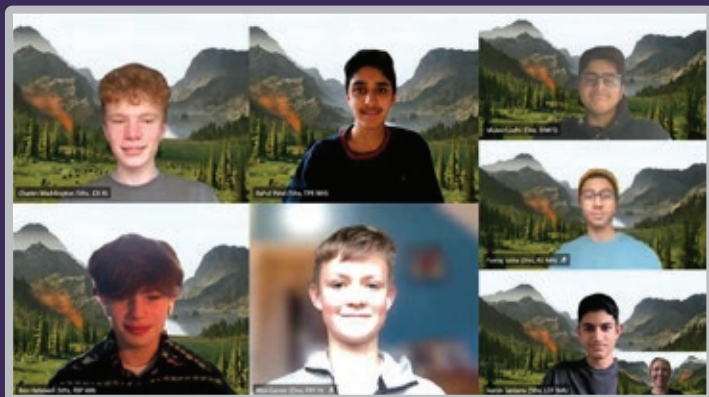
RIVERS

2020/21 Edition

RIVERS

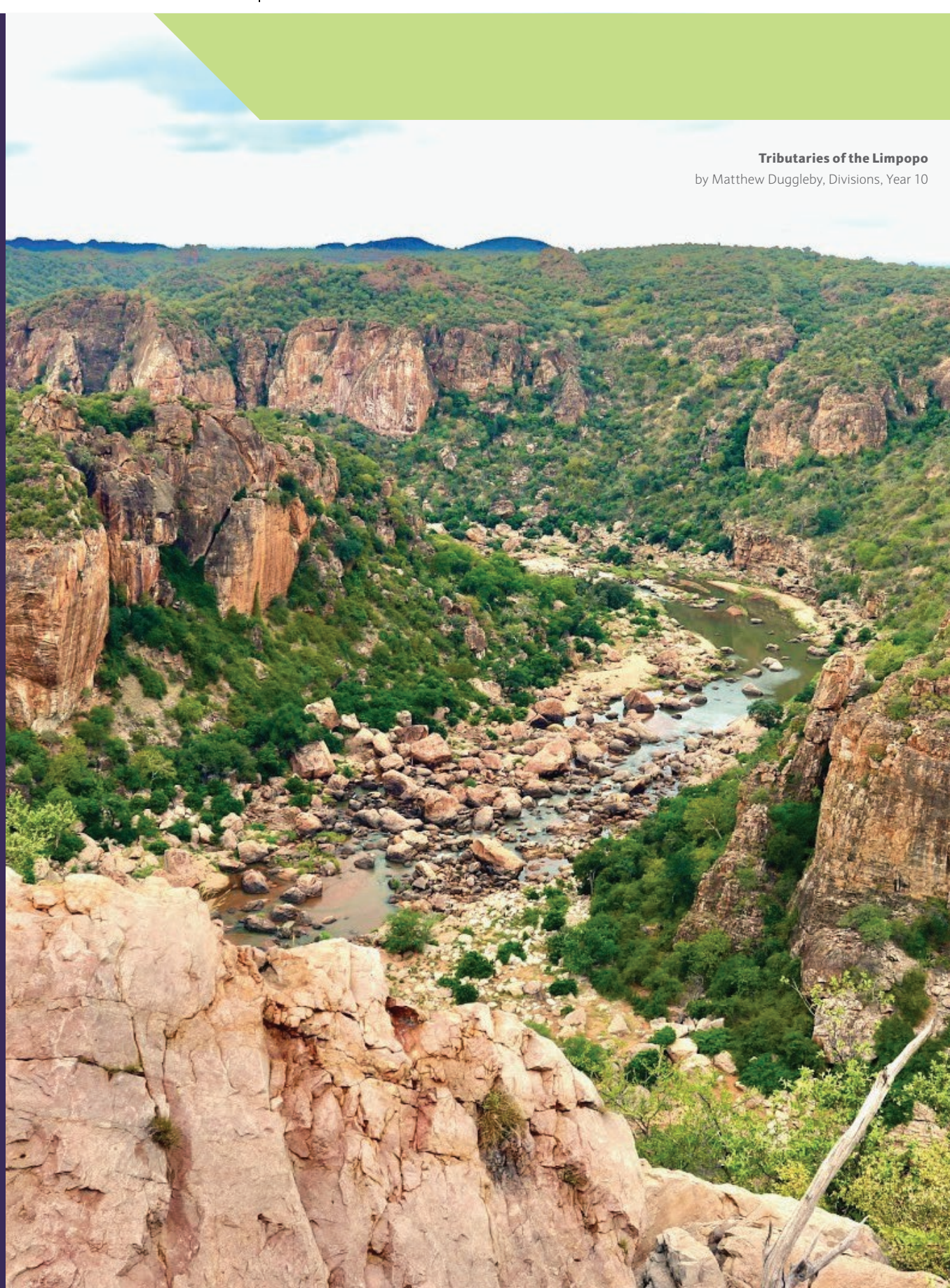
“Rivers and the inhabitants of the watery elements are made for wise men to contemplate and for fools to pass by without consideration.”

Izaak Walton *The Compleat Angler* (1653)



The Geographical Magazine team 2020/21

Fifths take the lead and work with the Divisions in this Middle School production.



Tributaries of the Limpopo
by Matthew Duggleby, Divisions, Year 10

WHAT'S IN THIS ISSUE?

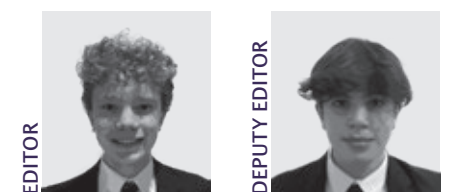
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Welcome to this year's edition of the Geographical Magazine. It has been a year of uncertainty with the COVID-19 pandemic and the inability to meet in person, but we are very pleased to present you this year's publication on rivers, created almost entirely online. Throughout this copy we delve into both human and physical aspects of our waterways, looking at the significance that rivers have in the world around us, extending far beyond what we learn in the GCSE course. I would like to say a massive thank you not only to Mrs Lemoine for her hard work and guidance through such unprecedented times making this magazine possible but also to all the boys who have contributed, both with articles and photos – we really appreciate it. We hope you enjoy the magazine.

Charles Waddington - Editor

Mrs Lemoine would like to thank the following Middle School boys for their hard work on this publication: Charles Waddington (Editor), Ben Hellewell (Deputy Editor), Rahul Patel, Aaron Sardana, Max Garvey, Mueez Lodhi and Yuvraj Juttla.



EDITOR

DEPUTY EDITOR

THE DANUBE

HOW TIME HAS CHANGED THE RIVER



**BEN
HELLEWELL**

Fifths, Year 11

The Danube is 2,850km in length, starting in Germany and passing through Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria, Moldova before its mouth at the Black Sea in Ukraine. It is the second longest river in Europe and for hundreds of years has been a major trade route through Europe. Furthermore, the river is famous for its beautiful scenery, running through 22 national parks, its rich habitats for aquatic life and how it has contributed to major conflicts and economic prosperity for many European cities over time.

Ever since people first settled along the Danube the river has witnessed much conflict. During the 19th and 20th centuries some of the most horrific events occurred along the river. One major reason for this conflict is due to the geography of the Danube, which runs through 10 countries. This has led to many events of 'ethnic savagery'. Some significant examples include the Battle of Aspern where Napoleon was defeated in 1809, and in 1942 Jews and Serbs were massacred by the Nazis in the Mauthausen concentration camp, also sitting on the Danube. This gave the river a reputation as a symbol of European division, especially throughout the war years. However, conflicts have continued until as recently as 1999 where many bridges of the Danube were destroyed in the Kosovo war. The divisions caused by the historic river were not only military but also created many political tensions between countries. For example, in 1997 there was a large debate between several countries over the construction of the Gabčíkovo Nagymaros Dam which went to the International Court of Justice as some parties felt it threatened the sustainable development of the Danube. On the other hand, the Danube's role as an influential part of European trade has remained constant throughout the years of conflict. >



Moving forward into the 21st Century the role and reputation of the river have changed as countries realise its economic potential and have collaborated peacefully on decisions to improve the future for the Danube. There are many ways in which the river has seen great economic benefits including: drinking water, transport and trade, energy, fishing and tourism. Drinking water is sourced for around 20 million people, mainly in Germany and Romania, from the river; however, not all countries have been able to utilise this economic opportunity as they have found that the water is too difficult to clean as pollution has affected the river over time. One of the main benefits of the Danube that has been around from the Middle Ages is transport and trade. Locks have been built to improve transport as hundreds of cruises travel down it every year. Geographically the river is very wide so large container ships have been able to pass through helping many local economies in the cities along the Danube's banks. International cooperation has reduced the growth

of this aspect due to environmental concerns in the last decade. These environmental worries have been taken into consideration with new dams being built providing renewable hydroelectric energy for countries. Fishing has also been critical to the development of the economy around the Danube as there is a very rich eco-system of many fish species. However, like other economic benefits, environmentalists are concerned about overfishing. Finally, the river attracts millions of tourists; 30 million to Budapest alone each year. This has led to the growth of many large economic hubs like Passau and Vienna. Governments have also built infrastructure for tourists, for example, the extensive bike paths running from mouth to source.

In conclusion, time has caused great change along the Danube river, from a 'River of Blood' to a prosperous economic waterway running through the centre of Europe. I hope the Danube continues to flourish and sustain its natural beauty as we progress into the future!



Niagara Falls
by Harrison Williams, Lower Sixth, Year 12

OUR RIVER SHOTS



Venice by Mueez Lodhi, Divisions, Year 10

THE BOSPHORUS

THE BOUNDARY BETWEEN CONTINENTS

CHARLES WADDINGTON

Fifths, Year 11



The Bosphorus runs through northwestern Turkey and acts as a natural border between Asia and Europe, dividing the country and the biggest city in the country, Istanbul, into two, uniting the Black Sea and the Sea of Marmara, and beyond. It runs for nineteen miles and throughout history has played a significant role in trade and geo-politics around Eastern Europe and further into Asia.

Russia is one of the world's greatest powerhouses and so requires access to a wide range of resources for it to function. While the country appears to have huge quantities of water on its doorstep when looking at a map, only one section of it has use to them all year round as Russia is situated in a largely tundra environment. This area of water is known as the Black Sea and is Russia's only warm water deep sea access. For 60 percent of Russia's trade to continue around the year, bearing in mind close to 30 percent of their GDP is driven by trade, it is vital they have access to the Black Sea. But for cargo ships heading for Russia, they need to navigate a treacherous stretch of water, the Bosphorus, before even considering the Black Sea. With the narrowest point measuring only 750 meters wide and boasting countless numbers of turns, it is no easy job especially when paired with guiding huge cargo ships built for the deepest waters through a city with a population of over 15 million people. The strait hosts 48,000 ships and carries over 55 million tonnes of oil annually, is three times busier than the Suez Canal and four times busier than the Panama Canal. It is quite a feat for such a relatively small stretch of water.

However, without the ability to use the Bosphorus, Russia loses a considerable sum of their annual GDP so it is within their best interest to keep relations with Turkey strong as, under the Montreux Convention of 1936, Turkey has complete control over the strait, meaning they can close it whenever they wish. The Strait also provides access to international waters for Bulgaria, Romania, Moldova

and Georgia. Not only is the Bosphorus hugely important for Russia and its neighbours regarding international trade across water, it also plays a significant role in trade on land across both the continents it separates and in attracting tourism to Istanbul.

Image by Charles Waddington, Fifths, Year 11



The Bosphorus is important for both land trade as well as tourism. It acts as the main gateway between Europe and Asia for mainland crossings. It has three bridges and a rail tunnel to cross between banks. Being the main access point via land into Asia from Europe and vice versa, goods transported via lorries and other motorised vehicles wishing to transfer between continents require these crossings. The only other suitable option would be to cross north of the Black Sea, a huge diversion. The Bosphorus acts as a bypass from the route up through north-eastern European countries. It is also a hub for tourists. Ferry crossings join the two sides of Istanbul together and allow travellers to see all parts of the city. It has huge historical significance dating back to ancient times where historical sites fill the banks of the strait, including Topkapi Palace from the Ottoman Empire and Galata Tower gifting a 360-degree view over the megacity to anyone who ventures to the top.

The Bosphorus merges both history and modern times, with the development of the Istanbul we recognise today around the roots of the old Ottoman Empire, Europe and Asia, two ethnic and cultural opposites, and Russia to the rest of the world through trade. The Bosphorus Strait has placed its stamp in the history books and is waiting for its next challenge.

THE TIGRIS

A GEOPOLITICAL RIVER

**ZACH
HUDA**

Fifths, Year 11



The Tigris river in Iran, Iraq, Syria and Turkey is Asia's second largest river at 1,900km. It is a key source of irrigation, power and travel which dates to the earliest known civilisations. The Tigris is one of the most important rivers in Asia, having supported cities like Baghdad, the capital of Iraq, and Hasankeyf in Turkey for centuries. The river's source is high up in the mountains of Turkey, an area called Lake Hazar. This source also produces the Euphrates river which runs parallel to the Tigris. Along with the Euphrates it makes up a river system which borders Mesopotamia in an area known as the Fertile Crescent. The two eventually join at a confluence, emptying out at the mouth of the Persian Gulf in the lowlands, in an area called the Shatt Al-Arab, in south-western Iraq. More than half the Tigris is found in Iraq, as other rivers flowing into the Tigris include the Greater Zab, the Lesser Zab, Adhaim, the Diyala, and the Karkheh.

The lower course of the Tigris is populated mainly by Arabs, while Kurds and Turks dominate the river's upper basins. The regional population consists of both Sunni and Shia Muslims, in Southern Iraq where there are not many Christians, Jews and other faiths and religions. The Arab population of the river's banks practice stock breeding and agriculture, which relies having upon the winter rains and spring snowmelt in the Turkish mountains. This overflow of water will lead to flooding on the banks which further feeds into the rich agriculture and vegetation. The Arabs way of life varies from nomadism of the desert Bedouins to the settled condition of the villagers in the agricultural areas. The traditional pattern of village life in Iraq suffered severe disruptions from both general societal forces and protracted warfare, during the second half of the 20th century. Upstream, there has been damming that has diminished the natural marshlands.

The economic life of the Tigris basin continues heavily on the waters of the river, despite oil being the most

dominant factor in Iraq's economy. Modern water-control technology has reduced the devastating effects of the flood-and-drought cycle, but at a cost of desiccated marshlands and decreased natural replenishment of soil nutrients. The mass volume of floodwater endangers the embankments which confines the river in its lower course. The last major flood in Baghdad was in 1954. The Tigris also provided an efficient means of transportation for individuals, military troops, and cargo, as well as for kings and statues of gods in religious ceremonies.

There is a wide range of biodiversity along the Tigris. In ancient times, oak, pistachio, and ash forests covered the mountains and foothills through which the upper Tigris passes. In the driest zones, Camel Thorn and Prosopis are the dominant shrubs. The densest communities of plants exist along the rivers and in the marshes. Interestingly, wild pigs are common there. Jackals, hyenas, and mongooses are found along the rivers in Southern Iraq, as well as a large variety of Indian Jungle Cat. Foxes, wolves, and gazelles are common in the alluvial plain. There are several kinds of viper and a small cobra, as well as a variety of non-venomous snakes. Lizards can even reach lengths of up to 0.6 meters. There are several varieties of catfish, as well as spiny eels and in Baghdad Ganges sharks have been spotted.



A LOCAL BREAK

THE CHESS VALLEY WALK

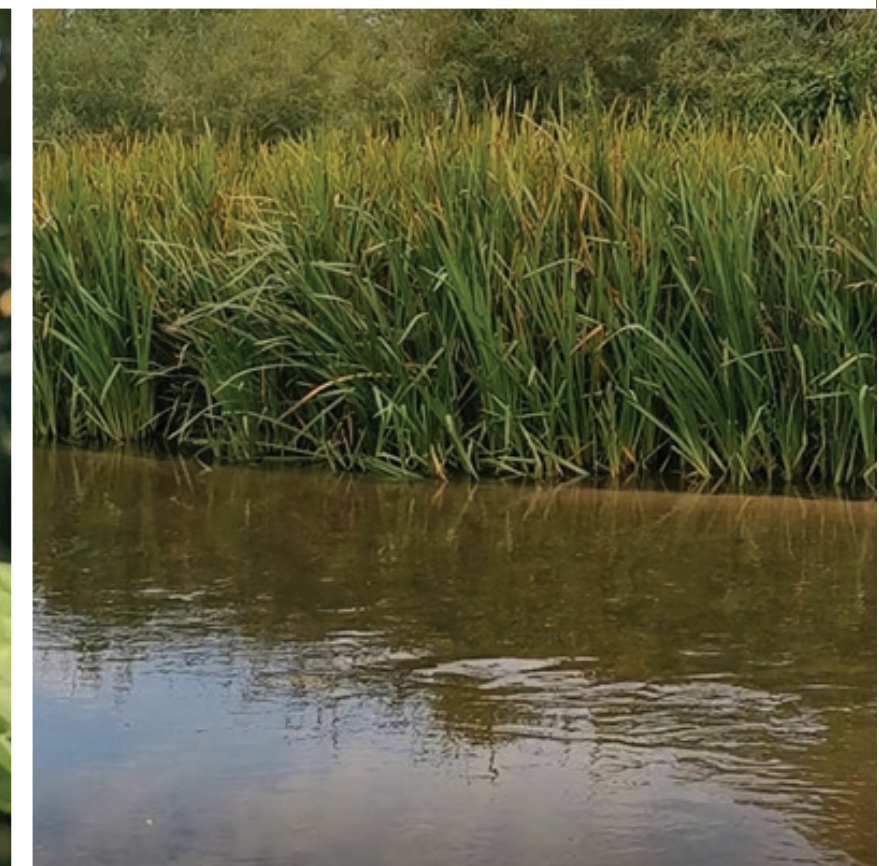
SAMAY KACHALIA

Thirds, Year 7



The Chess Valley Walk is a lovely nature path that runs alongside the River Chess from its source in the Chiltern Hills of Chesham down to Rickmansworth. This spot of national beauty is a wonderful place to walk peacefully and hear the birds chirping, especially after the lengthy lockdown! Geographically and technically, the River Chess is a tributary (a river that joins another bigger river) to the River Colne, which is again a tributary to the grand River Thames.

There are many things that you can spot, from sparrows to kingfishers. You can even see the long, small brown trout swimming about, making sporadic changes in direction. Have a look at some of the photos I have taken here.



All images by Samay Kachalia, Thirds, Year 7

A WATER CRISIS

THE MELTING CRYOSPHERE IN ASIA



**EBEN
TERRY**

Lower Sixth, Year 12

The 'third pole' refers to the Hindu Kush region of Asia in the Himalayan mountains. An area which spans 1.7 million square miles over ten different countries, it is home to around 46,000 glaciers and holds more snow and ice than anywhere else in the world apart from the North and South poles. It is the source of 10 major river systems which provide irrigation, power and drinking water for over 1.3 billion people, over 20% of the world's population. Consequently, this region holds a large amount of socio-economic and cultural importance both directly and indirectly for the inhabitants of the region itself and those that benefit from its natural resources elsewhere in Asia.

The region is the source of major river systems that support some of the most populated countries on the globe, such as China and India. Meltwater from glaciers feeds into some of the largest rivers in Asia, such as the Ganges, Yangtze and Brahmaputra rivers. The rise of many of the main Asian powers are undoubtedly thanks to the stable water source that these rivers provide. For example, the Yangtze has allowed the development of several inland cities in China, such as Wuhan and Chongqing due to the important trade routes that the river has facilitated, allowing access inland from the coast. The Yangtze basin generates nearly half of China's GDP, contributing to 44.7% of China's GDP in 2015 and is the third largest economy in the world by GDP, bigger than that of Japan or Canada. The region also holds international significance as a hub of industrial output for large TNC's such as Apple, Walmart and Nike, to name just a few. This gives an indication of the importance of a stable water supply both domestically and internationally. Many other economies are also dependant on water sourced from the 'third pole' such as that of the Ganges basin. The Ganges provides water to 40% of India's population but also holds large cultural significance in the Hindu religion.

The region faces one major challenge: climate change. The rate of warming in the 'third pole' is significantly greater than the global average, with temperatures increasing by 1.5 degrees Celsius, more than double the global average. Moreover, susceptibility of warming increases with altitude meaning the high-altitude region is more at risk. More than 500 small glaciers in the region have disappeared completely. Dust and pollutant particles settling on the surface of the ice has also caused it to absorb more sunlight rather than reflecting it away, reducing the albedo effect. Initially, this melting will result in an increased flow of water which could potentially lead to flooding in downstream areas. However, eventually the sources of water

will diminish as more glaciers retreat and disappear, leading to drought and desertification. Studies show only a reduction in black soot and Greenhouse Gas emissions will prevent the glaciers in the region from retreating and disappearing.

The issue of an insecure water source for many of Asia's larger rivers could lead to a significant water security crisis. Firstly, growing populations in countries such as India and China will place more pressure on water supplies both directly (drinking water) and indirectly (an increased demand for arable crops). To add to this, industrialisation in many South-East Asian countries has again placed more pressure on water supply through manufacturing processes, as well as increasing

demand for electricity. This surge in demand for electricity has led to the construction of dams, such as the Three Gorges Dam for the production of hydroelectric power. Despite the move away from the use of fossil fuels and non-renewable energy, the damming of major rivers has led to an international governance issue. A prime example of this is the Mekong River which rises in Tibet and runs through six countries before entering the South China Sea from Vietnam. The water that the river provides is a shared resource. However, a lack of international cooperation and no water governance plan has led to the decimation of the world's largest inland fishery and has caused water levels to drop dramatically due to upstream damming. Scientists

calculated that, over a 28-year period, dams in China had withheld 410 feet of river height and dams could block 97% of sediment from reaching the mouth of the river, dramatically decreasing soil fertility in its lower course.

Overall, the combination of melting glaciers at the 'third pole' and a lack of international water governance could lead to severe drought in parts of Asia. A crisis of this scale could threaten the livelihoods of hundreds of millions of people and severely impact the economic development that we have seen in Asia over the last 50 years.



THE CHICAGO RIVER

THE INFLUENCE OF HUMAN AND PHYSICAL FACTORS

**MAX
DUCE**

Fifths, Year 11

I have been fortunate enough to visit Chicago a few times, and each time we have been there we have taken a boat tour of the city via the Chicago River, finishing off with a long wait in the lock to change the level of the water so that the boat could enter Lake Michigan.

The reason the river and lake are at different levels goes back to 1885 when a storm caused the river to deposit large amounts of sewage and industrial waste into Lake Michigan from the city. Since Lake Michigan was the source of drinking water for the inhabitants of Chicago, and cholera was increasingly causing deaths amongst the population, something had to be done. At that time the river flowed from the city into Lake Michigan, however, engineer Sylvester Chesbrough had a plan to completely reverse the flow so that it flowed from the lake into the city and then through a canal to the Mississippi River. By 1900 William Boldenweck had completed the work. This was done by a series of engineering feats including taking water from the lake and discharging it into the river, a canal between the Chicago River and the rivers that eventually drain into the Mississippi and a series of locks. The waste of Chicago would now flow into the Mississippi River and become somebody else's problem!

The new Illinois and Michigan Canal, which diverted the waste to the Mississippi River not only helped with the city's sanitation, it also opened up trade routes from the Great Lakes to the Midwest. Chicago was a large industrial city and so producers of the city's steel and the meat packing industry could more readily distribute their products. The Chicago River is also interesting because of its colour. Whenever I have visited the city it always has a blue/green tint to it, not the brown / grey colour often seen in other cities. This is because of a number of factors. The first, and perhaps the most memorable one is because the entire river is dyed green every year for St Patrick's Day!

The Chicago River on St Patrick's Day
by Max Duce, Fifths, Year 11

THE CHICAGO RIVER

Since the 1960s the dye is a vegetable-based dye, not the environmentally damaging oil based one used before.

Even throughout the rest of the year the river still has a natural blue/ green tint. This is because of the clay on the riverbed which sits on top of Niagara limestone, the inflow of the water from Lake Michigan and the algae which thrives in the river's conditions.

The city's architects over the years have chosen to enhance the effect of the river's colour by using glass which matches it. Many of the buildings and skyscrapers have a green tint to their glass. When you take a boat tour around the city the effect this gives is stunning. The water reflects the glass and the glass reflects the water.



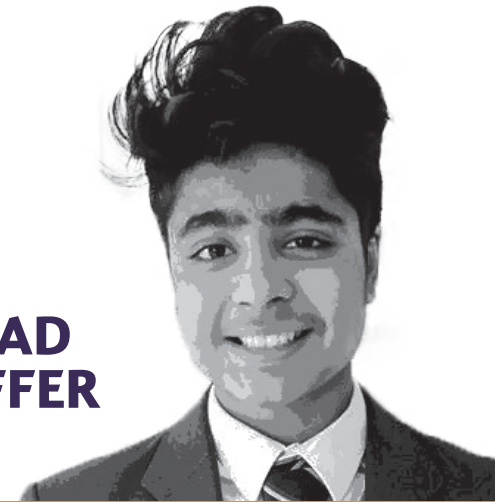
The Chicago River
by Max Duce, Fifths, Year 11



The Glenelg River, South Australia
by James Meinck, Divisions, Year 10

THE COLORADO RIVER

CRISIS IN COLORADO



**MUHAMMAD
ABBAS JAFFER**

Divisions, Year 10

The Colorado River, a large river in North America, begins in the Rocky Mountains of Colorado, USA, and usually flows west and south for 1,450 miles to the Gulf of California in North-Western Mexico. It spans across seven countries, as well as the regional boundary between Arizona and Mexico. The river, originally known as the Grand, expands from a cold mountain trout stream into a traditional western waterway slashing through jagged gorges, serving as Colorado's flagship destination, the awe-inspiring Grand Canyon.

As it passes through no less than 11 different National Parks and monuments and as it tumbles through the varied landscapes, the utilisation of this river begins to increase. It is a critical water supply for agriculture, industry and municipalities from Denver to Tijuana, which fuels a \$1.4 trillion annual economy. Fishing, white-water paddling, boating, backpacking, wildlife viewing, hiking, and a myriad of other recreational opportunities contribute some \$26 billion alone. Having said this, the title of the hardest working river in the West is undoubtedly deserved.

It is as complex as it is exceptional, encompassing a wide range of natural environments: from the alpine tundra and coniferous forests in its headwaters and elevations; to the truly arid habitats dotted with desert plants in the lower basin. The distribution of species with these environments varies. Wide mammals, such as the mountain lion and coyote, inhabit the middle and upper elevations, while beavers and birds, including the bald eagle, prefer the willow-lined riverbanks.

As famous as the Colorado may be, it's similarly infamous for the stresses located upon it due to over-allocation, overuse, and further than a century of manipulation. Continuous decades of wasteful water management policies and practices have caused the river's

water and storage levels to be critically low. For instance, the Lower Colorado River, which donates water to Las Vegas, Los Angeles, San Diego, Phoenix, and Tucson, as of now faces a 1,000,000 section of land foot shortage and is at risk of running dry far before the Pacific.

Additionally, climate change will eventually decrease the river's stream by 10-30% by 2050.

The sequence of dangers confronting the natural river have caused it to take the first spot on America's Most Endangered Rivers report in 2015. There are threats from all sides: a proposed modern scale development venture starting into the untouchable heart of the canyon, radioactive impurity from uranium mining, and an extension of groundwater tapping if an enormous expected advancement on the south edge occurs, an incident which is exceedingly probable. These things pose a threat to the river's wild nature and the significant experience to the Grand Canyon that has a place with each American. There is always hope for the Colorado, but there is change needed for it to remain a healthy river. A revived appreciation and concerted commitment to improve the resource could yet compose a crucial chapter in the tale of the great Western gem that is the Colorado River.

THE AMAZON RIVER

THE LONGEST RIVER



**JOSHUA
SABEL**

Thirds, Year 7

Why the Amazon?

I am writing about the Amazon River, as in 2015, I ventured there with my family. I was only six years old and it left a lasting impression on me. This mighty river is the life-blood of the precious tropical rainforest. Right now, I am going to share with you my experiences up close of this unique landscape; the flora and fauna of the river and its surroundings, and the indigenous culture and food.

Before I came to this river, I thought it would be as wide as the Thames - that was completely incorrect! The main part of the Amazon River is two to six miles wide in the dry season, when I was there. During the wet season, the river could swell up to an astounding thirty miles in width! On our first journey to where we were staying, the main body of the river at Coca in Ecuador appeared to be brown and murky. Under a hazy sky, I couldn't even see from one side to the other. Unexpectedly to me, in the main Amazon, the indigenous people travelled by motorized canoe, which felt like a very fast speedboat. Most of my initial fast journey from Coca involved gliding peacefully on the tributaries of the Amazon. Tributaries are where a river splits up into different smaller streams. I travelled on tributaries which were about five metres wide, with lush green vegetation, towering up from the banks.

The Amazon River feeds many plants and animals including monkeys such as spider monkeys and howler monkeys. The tributary banks were lined with mangroves and lush pink bananas, which were awesome to look at. Many insects rely on the surrounding environment, such as leaf-cutter ants, that transport fragments of leaf many times their size. I remember these strong ants scurrying in single file, like a train that never slept. I also saw many other creatures including tarantulas, scorpions and the memorable Bullet Ant. As big as a large wasp, the Bullet Ant has the most painful sting out of any creature —

excruciating! I had to avoid them. There were also bigger creatures in the Amazon such as caimans. These reptiles were smaller versions of crocodiles. Glimpsing their scaly bodies camouflaged and submerged in the water was one thing by day, however, these caimans were mostly scary at night as in the dark, you could see their eyes glowing like red hot coals. The Amazon river includes one of the deadliest fish, the piranha. These unusual fish have jagged piercing teeth that like to bite; normally they feed on small bugs and fish, but if they are hungry, they might nip a human. Memorably, I went fishing for piranhas, sadly I did not catch any, but the cunning creatures got through

copious amounts of fresh steak by nibbling it from around the hook! Rustling in the trees, I remember seeing the black and white faced spider monkeys swing from branch to branch, peeking through the exotic foliage. Exquisitely beautiful toucans with their colourful plumage nested in the top of the canopy. Another insect in the Amazon is the Lemon Ant, they have this name as they taste very sour. I was very lucky and I licked Lemon ants live off a twig - they were tart yet delicious. I even tried the Queen ant (it had wings)!

When I was in the Amazon, I stayed with a tribe called the Kichwa—one of the largest remaining indigenous

tribes of Ecuador. Unlike many other communities, the Kichwa are very eco-friendly; they did not build a hotel, instead they made visitors sleep in a little wooden hut on stilts. The Kichwa liked to eat food such as Coconut Larvae, which was a grub that lived in a palm tree, they called this “Chontacuro.” Holding a live Coconut Larva was interesting, it was about as big as an adult thumb and wriggled continuously. I enjoyed sampling the Chontacuro, grilled, which were very salty and crispy on the outside but the inside was juicy, like a hot mushroom. They also liked to drink “Chicha,” which was an alcoholic drink made of the yucca plant. Trying the drink, my mum said that it looked

like lumpy yoghurt and tasted like vomit! Tributaries are what the Kichwa used most, instead of roads, they moved around by canoe and paddle. One thing that surprised me most was that all these indigenous people still had mobile phones and electrical devices, even though there were not many shops or development.

Overall, I really enjoyed my trip to the Amazon River. Unfortunately, the Amazon rainforest is becoming diminished by everyone exploiting the oil and wood, hopefully many other communities will realise this problem and adapt. I hope you enjoyed my story.



THE LIMPOPO RIVER

THE RIVER OF GOLD

The Limpopo River
All images by Matthew Duggleby, Divisions, Year 10



MATTHEW DUGGLEBY

Divisions, Year 10

The Limpopo River is more likely to feature in an English lesson than one on Geography. Rudyard Kipling ensured millions of children would remember its name from 'The Elephant's Child', the story of how the elephant acquired its trunk. Whilst the Limpopo is not the longest river in the world, or a major trade route, it has a very important place in the culture, history, ecosystems and future of southern Africa.

The Limpopo River is almost 1,800 km long. It starts at a waterfall near the city of Johannesburg in South Africa. The city made famous by gold, gave Limpopo its other name, 'the River of Gold'. Unfortunately, today the route of the Limpopo through the city is less glamorous. As people flocked to the city from the countryside and gathered in densely populated 'townships' the river became an open sewer, suffering like many others in similar positions around the world.



Instead of looking along the whole length of the river we will look at a small section of the river as it passes through Crooks' Corner, the point where the borders of South Africa,

Zimbabwe and Mozambique meet and the Limpopo is joined by its tributary the Luvuvhu.

Here the Limpopo is wide but the amount of water varies considerably between the dry and wet seasons. In the wet season it is a barrier that stops people and animals moving between South Africa and its neighbours, except across the small number of bridges. Even these can get washed away when the rains are very heavy. In the dry season the riverbed can seem to be completely dry. This brings new challenges as poachers and smugglers can escape the authorities.

There is nothing new in this behaviour. Crooks' Corner was given its name due to the antics of Cecil Barnard over 100 years ago. Barnard undertook elephant poaching operations across all 3 countries from a camp on an island in the middle of the Limpopo River. He was able to escape the authorities by moving his camp a short distance from one country to another. While he was a constant problem to the authorities, he developed a strong relationship with the local population saving villages from starvation and improving their health. Elephant and rhinoceros poaching still remains a real problem, and poachers are still able to



The Limpopo River
All images by Matthew Duggleby, Divisions, Year 10

cross borders to escape capture. The area is now part of a very ambitious transfrontier park that hopes to provide greater security for these magnificent animals before it is too late.

The ecosystem around the Limpopo River in this area is diverse and spectacular. Rainfall in the wet season provides vegetation to support animals and birds. Large herds of elephant drink in the river and eat the trees. The rivers have created deep gorges in the sandstone. Huge baobab trees

are scattered across the landscape, looking as if they have been turned upside down so their roots are now at the top.

This area of the Limpopo now belongs to the Makuleke tribe. In 1969 the land was forcibly taken from the tribe by the white government in South Africa. This action was supported by many conservationists who welcomed the increase to the size of the Kruger National Park without realising the effect this would have on the local population. In 1994 the



land was returned to the tribe following the election of the new democratic government in South Africa. The tribe is now working with the Kruger National Park to protect the wildlife and develop tourism. This will provide both income and employment whilst allowing their traditional ways of life to continue.



VICTORIA FALLS

THE SMOKE THAT THUNDERS

**UMAR
KHAN**

Thirds, Year 7



In Easter 2016 when I was seven, I visited Africa for the first time with my family. Our first stop was Zambia and I was fortunate to view the epic Victoria Falls in all its glory. I remember walking for a long distance along a small narrow bridge to get a perfect view of the infamous falls. This is the bridge that connects Zambia and Zimbabwe as the falls sits on the border of these two countries. A spectacular rainbow stayed under the bridge, in a perfect circle. It was an extraordinary sight; I had never seen anything like it. I still remember how loud the water was pounded on the corroded rocks. It was like a constant drum beat in your ears. I was so intrigued by this natural phenomenon that I researched the falls.

The Victoria Falls is the world's largest natural waterfall as its width spreads to about 1,708 metres and is 108 metres high. Approximately 650 million litres of water is dropped over the cliff edge every minute where the spray of water can reach 400 metres high, flowing into the lower Zambezi river, the fourth longest river in Africa after the Nile, Congo and Niger Rivers.

The Zambezi river basin is the largest in Southern Africa, spanning eight countries and providing water to around 40 million people. At one point, four countries meet at the river – Namibia, Zambia, Botswana and Zimbabwe. The river is home to several hundred species of fish, some of which can only be found there. The riverbanks are also home to many crocodiles, hippopotamuses, herons and pelicans. The Zambezi enters the Indian Ocean in Mozambique where it crosses the country to empty into the Indian Ocean.

ZAMBEZI RIVER

FOUR MILES THROUGH SIX COUNTRIES



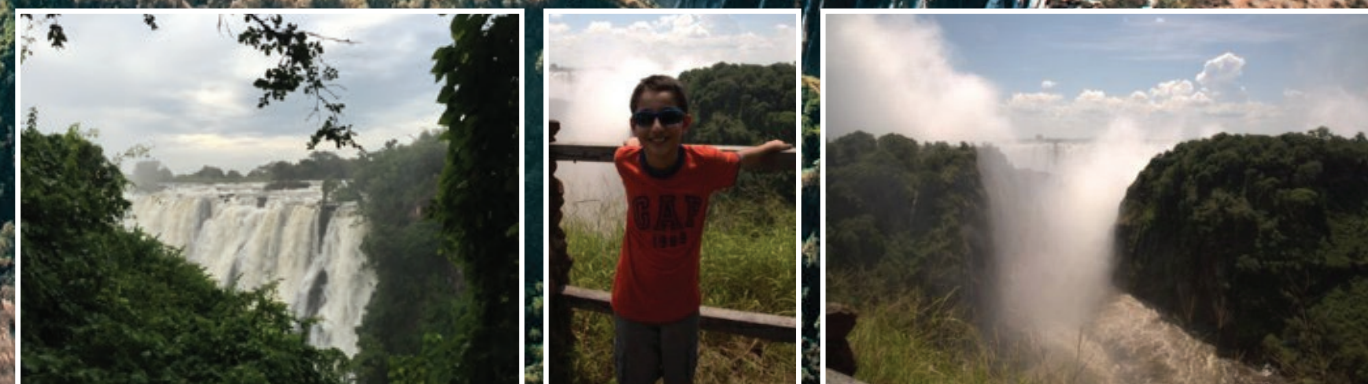
ZAIN KHAN

Divisions, Year 10

The Zambezi River is situated on the border of six different countries and passes through the likes of Victoria Falls and the Kariba and Cahora Bassa Dams, which are two of Africa's biggest hydroelectric projects. I personally have seen Victoria Falls and it was very majestic with its 1.7-kilometre width. It has a plunge pool depth of 5.3 metres. Zambezi means 'great river' in the language of Tonga and forms the fourth largest river on the continent, including the tributaries. The river flows over the Chavuma Falls and enters a broad region of hummocky, sand-covered floodplains, the largest of which is the Barotse, or Zambezi, Plain. The region is inundated during the summer floods when it receives fertile alluvial soils. I found this fascinating because this 4-mile-long river supports six countries and countless villages and wildlife. It is also referred to as the 'River of Life' due to this reason.

When the rain season comes, the locals must move uphill, and they practice the Kuomboka ritual.

This is in the belief that they will always have this water source to share from. It also symbolised the relationship with the wildlife around them. Even though so many people live off this river and the fact that it is a major tourist attraction in Africa, it is not really used as a path of transport or shipment of goods as the gorges and waterfalls make it too difficult to pass through.



THE YARRA RIVER VALLEY

LEGAL RIGHTS FOR NATURE

MAX GARVEY

Divisions, Year 10



The Yarra River in Australia flows west from the Yarra Ranges, through the Yarra Valley and then opens out into a plain as it meanders through the suburbs and Melbourne City. It has a muddy colour, though this is not due to pollution, it is because of the clay soil of the riverbed. Originally, the Yarra River was called the Yarra Yarra River due to the fact that it means ever-flowing river in indigenous language.

The unusual characteristic of the Yarra River is the fact that it has been given personhood and legal rights.

The 2017 Yarra River Protection Act affirms the river's intrinsic and human values and recognises the river and lands as a living and integrated system. What does this mean in practice? Consistent planning laws have been put into practice along the river; the banks, the birds and the fish are all protected by law, and the local Aboriginal people have been appointed 'custodians of the land and waterway'. This was carried out after extensive community consultation, and has the support of local people. So how did this initiative come about?

An indigenous tribe leader brought this initiative to the Australian parliament, pledging to save the Yarra river or in Woiwurrung: "Wilip-gin Birrarung murrn" or "keep the Birrarung alive". In Woiwurrung, they call the Yarra River the Birrarung. It was the first time in history that a Wurundjeri person had stood on the floor of parliament and the 2017 bill was the first to have a "dual indigenous language title".

This unusual step in Australia stemmed from the ground-breaking Wanganui Act of 2008, which was passed to protect the Whanganui river in Ecuador and also inspired similar protection acts across the globe including: America (Klamath River), Ecuador (Whanganui River) and India (the

River Ganges), which have all been given legal personhood. Now that some rivers have been given legal status, is it time to consider other aspects of nature which are essential to the ecosystem? This is the first step towards a living environment that can enjoy protection to a greater level.



THE YANGTZE

A CULTURAL AND HISTORICAL TREASURE

**LUCA
MCCORMICK**

Fourths, Year 9



The Yangtze River is the third largest river in the world with a total length of over 6,000 km; a distance greater than that between London and New York. This river and its surrounding basin are home to over 550 million people – or around 40% of China’s population. It was also at the root of China’s early development as a transportation corridor for goods and people. However, in the last 50 years, this cultural and historical treasure has been subject to record levels of pollution as a by-product of China’s rapid industrial growth and failed environmental policies. In fact, more than 50% of the plastic waste deposited into the oceans every year flows out of the Yangtze.

One rarely considered casualty of this pollution has been the extinction and depletion of many species of river life. One example of this is the Chinese paddlefish (known as the “Panda of the Yangtze”) which existed for 200 million years but which became extinct in 2003. Much of this contamination originates from the hundreds of petrochemical complexes which lie along its riverbanks and pump untreated toxic chemicals into the waterway. For this reason, large areas of the river have been rendered unfit for use and some places are today too polluted to even touch. Construction of the massive Three Gorges Dam on the Yangtze starting in 1994 has only exacerbated these threats to China’s ecosystem and the heavily polluted river upstream is now too slow to flush waste away.



Tower Bridge
Mueez Lodhi, Divisions, Year 10

OUR RIVER SHOTS



Florence
Mueez Lodhi, Divisions, Year 10

THE GANGES

RELIGIOUS SALVATION TO DEPARTING SOULS

DARSH TULSIAN

Thirds, Year 7



The Ganges is one of the largest rivers in Asia. It rises from the Gangotri glacier in the western part of the beautiful and extravagant Himalayan mountains. Water from the melting glaciers and rain travels down the Himalayas forming several tributaries which later join to form the Ganges. It flows over 2,500 km through India and Bangladesh into the Bay of Bengal. The Ganges basin has a whopping size of over 1 million square km.

At the famous town of Rishikesh, situated at the foot of the Himalayas, the Ganges begins to flow onto the Indo-Gangetic Plains, part of the North Indian River Plain, which is a vast, relatively flat, fertile plain that makes up most of the northern and the eastern parts of India as well as parts of Pakistan, Nepal, and Bangladesh. When the tides are low, and the wind is calm, you might be able to see the other side!

The Ganges is considered to be a Goddess and mother in Hindu tradition. It is the centre of spiritual life for more than a billion people.

Though iconography of the goddess Ganga varies, she is most often depicted as a beautiful woman with a white crown, riding a creature called Makara with the head of a crocodile and the tail of a dolphin.

A pilgrimage to the Ganges is regarded as a holy ritual and taking a dip in the sacred water of the Ganges can cleanse a person from all his past sins. It is a strongly held belief that

cremation at the banks of the Ganges or immersing the ashes in the Ganges after death provides salvation to the departing soul.

In India, the Ganges is way more than just a river. It is a source of livelihood for many people living on the banks of the river – irrigation, fishery, water-dependent industries, adventure and tourism. The water from the river is used for irrigation in the Gangetic Plains. Agriculture accounts for approximately 15% of the Indian GDP and over 40% of employment. Many industries, with significant reliance on water, eg sugar factories, are set-up on the banks of the river. Certain religious towns and cities along the banks of the Ganges, eg Varanasi, Rishikesh, attract tourists from all around the world. Munger is one of these towns where my grandparents live. In the summer months, adventurous activities such as river rafting are also organised in specific stretches of the Ganges.

The Ganges is regarded as the world's fifth most polluted river. The pollution of the Ganges is a massive challenge for the people who depend on the river for their day-to-day life and India at large.



The pollution of the river is a threat to its 140 fish species, 90 amphibian species and the human population dependent on the river. About 40 per cent of India's population across 11 states is dependent on the river for its water. Disposal of the untreated industrial waste, from the industries set-up on the banks of the Ganges, human waste from the populous cities and towns the Ganges passes through, and Indian religious traditions of bathing in the Ganges and disposing of the holy waste are the key causes of the pollution in the river. Over the years, many Indian Prime Ministers have pledged significant sums of money for improving the quality of water by diversion, treatment and interception of domestic and industrial waste. The current Prime Minister, Mr Narendra Modi, who is a devotee Hindu and is allied with Hindu nationalist groups, has made the river's clean-up a signature issue for his government. Modi has vowed to jump-start the effort, which has languished for decades. The \$3 billion-dollar clean-up program began in 2015, but the continued pollution has shown little progress.

THE ADYAR RIVER FLOOD

MY GRANDFATHER'S STORY



JAI ELANGOVAN

Upper Thirds, Year 8

The Adyar River in Chennai, India burst its banks in December 2015, causing catastrophic flooding of the city.

This flood particularly interests me as my grandfather became trapped on the roof terrace of his home in India and often talks to me about his experiences during that time.

The Adyar River runs through the Southern Indian city of Chennai, India. The main source of the river is the large, 15.38km² Chembarambakkam Lake, located to the west of Chennai.

Usually in the monsoon season from October to December, there is heavy and prolonged rainfall in Chennai. Chembarambakkam Lake is a rain-fed reservoir which supplies water to Chennai city through pipelines. When the lake reaches its full capacity, the excess is released into the Adyar River. Releasing excess water into the river via the dam is important, because if that is not done, then the lake could breach its walls, leading to an uncontrolled flow of water into the Adyar River, and thus Chennai city. Reports state that due to the dam being opened too quickly and for too long (into the already full Adyar River) the river burst its banks, and led to the resulting catastrophic flooding of Chennai.

Several other factors also contributed to the severity of the flood. Human factors, such as illegal buildings on sites that were not approved for building, were a contributing factor. According to the Indian Express newspaper, there ->

are 'multi-storey residential and industrial structures that have been built upon sites that might have been a lake, canal or river 20 years ago'. Chennai's government also reported that over 300 water drainage sources (such as tanks, canals and lakes) have gone 'missing' due to illegal building. No doubt this also contributed to the 2015 floods, due to limited options for flood water drainage. Another human factor that contributed to the severity of the floods were poorly planned flood prevention systems. Drainage systems were reported to have been built in some places without considering the character or relief of the land. This lack of consideration may have led to some of these systems being rendered useless.

The immediate effects of the flood were devastating. More than 500 people lost their lives and more than 1.7 million people became homeless due to their homes being destroyed.

Economic impact to the community was significant. Basic commodities such as vegetables, drinking water and milk were in short supply. Milk cost five times more

than the average prices after the flood than before. Vegetables became more expensive due to the destruction of crops. Some of the unhygienic and overpopulated areas of Chennai experienced outbreaks of diseases such as Typhoid. Pools of dirty stagnant water also caused over-breeding of mosquitos, causing a rise in malaria cases.

It has been said that the extent of the damage caused by the floods added up to a monetary value of ₹1 trillion (approx. £10 billion GBP).

Citizens with knowledge of technology or IT, collaborated to create a website that helped people find food, water and shelter using their smartphones or computers along with this web link: <http://chennairains.org/>. Social media sites such as Facebook created groups for Chennaites to register themselves as 'safe' so that family and friends outside of the city and country could know they were alive and safe.

The Indian Army, Navy, Airforce, along with national disaster relief teams of India were all deployed to help rescue people who were stranded in their homes with no food and water. Many volunteers also helped in making

food for the vulnerable and distributing it. It is said that around 7000 people managed to receive these meals.

I asked my grandfather a few questions about his experiences when he was stranded on the roof terrace of his house during the floods of 2015.

Here are his responses:

1. Q: **How long were you trapped on the roof terrace for?**

A: For 2 days and a night as the ground floor and first floor were completely flooded (I remember seeing our fridge and TV floating out of our home!).

2. Q: **What efforts were made to help you in your precarious situation during the floods?**

A: Once the Helicopter Relief Teams saw I was stranded, they threw food parcels and blankets, whilst I was waiting to be rescued, but the helicopter managed to accidentally blow away the only chair that I had to sit on in the terrace!

3. Q: **Do you recall any interesting events that occurred during the time you were trapped?**

A: I was trapped on the roof terrace with our neighbour's dog and remember sharing my food parcels with her! She really kept me company and eventually we were rescued by boat. I tried not to think about all the river snakes floating in the flood water! I also remember thinking how bizarre it was to see motor boats coming down the roads in Chennai!



THE NILE:

A NETFLIX DOCUMENTARY REVIEW



**MUEEZ
LODHI**

Divisions, Year 10

Joanna Lumley is a British actor who follows the River Nile 4,000 miles deep into the heart of Africa. The river cuts through Egypt then through the desert of northern Sudan and joins with the Blue River Nile up in northern Ethiopia starting then in Rwanda.

The documentary brings in a blend of both the old and the new. An example of this is Cairo. On one side of Cairo, you have the busy city criss-crossed with bridges running over the Nile. A stone's throw away you have the pyramids in the desert which the Nile also use to run past. Joanna said that the pyramids had to be covered in fine limestone which was brought from the Nile. Therefore without the Nile, the pyramids wouldn't be there today. There is no river near the pyramids now due to urban sprawl. The documentary also outlines all the river's social, political, economic, environmental and demographic benefits. Some of the Nile's economic benefits come from tourism and cruises through the river Nile giving immense pleasure to people overseas. An interview from a tourist who was travelling in a cruise on the Nile said that "it's such an interesting river because the scenery always changes ... so you really don't know what to expect." This emphasises the diverse landscapes the Nile passes through. The social geography of the river dates back 5,000 years. Every August the river would flood create perfect fertile land for crops. Therefore without the Nile, Egypt would suffer due to the vast majority of people relying on the river.

I would overall rate the documentary an 8/10 because of how it doesn't just portray the Nile as a River but as a way of life for the North African people. If you enjoy a series or have a spare 45 minutes to dip into this on Netflix or YouTube, I would recommend this documentary. It will stun you how vital the Nile is and how all its history has shaped Africa today.



I'M A GEOGRAPHER: OXFORD PROFESSOR DANNY DORLING

Interviewed by

**CHARLES WADDINGTON
AND LEWIS MARDEN**

Fifths, Year 11



1. Oxford University is one of the most prestigious in the world, what is it like being a Professor there?

Oxford University is a very nice place to work as it's a lot easier than being a professor elsewhere (I was one in Sheffield before), as the amount of time you have to spend worrying about financing the place is less than others. I am very lucky to be able to work there.

2. What started your interest in Geography?

My Grandad got me into Geography actually. He was a somewhat obsessive geography teacher and so when I was five or six, he taught me how to read an Ordnance Survey map and so everything went from there. I would say it wasn't really my choice!

3. I understand you are one of the founders of the organisation World Mapper. Could you briefly describe for us what it is?

It is a group of six people who came together about 15 or 16 years ago and we decided that we would create a map of the world for each of the 365 days of the year. Throughout the year we drew maps of everything you could imagine, representing themes like poverty or religion. It was perfect because it was the time of the Millennium Development Goals, global aims set by the United Nations, so it meant that we had information of the poorest countries which we had never had before. Having said this, we had no funding, apart from that of prize money, and the maps were much harder to keep up to date than to actually create as we constantly had to find updated statistics.

4. Following on from that, what is your favourite map that you have created with World Mapper and why?

I would say the one I have to point out is the map of >

deaths from AIDs. It's such a sad map as the disease was new and scary and highlighted the high deaths from Africa and India. It is my favourite because when put up on a screen, people have an emotional reaction, partly due to the colours shown and partly due to Africa appearing heart shaped. You can't predict these things, but sometimes you can create a shape that has a larger effect than just the map itself.



5. You have researched and written a lot about inequality, why is this such an important topic for you?

During my childhood I was the son of a doctor and thus had a very high chance of going to university.

However, I grew up in part of Oxford close to a roundabout which had the most diverse neighbourhood in Britain. It had massive inequality and I knew that lots of these people would have near to zero chance of going to university. There was a subway under the roundabout where I lived and you could tell a lot about people just by the direction they exited. In the 2000s lots of work began on inequality and people began to realise that it was very harmful, a bit like finding smoking was cancerous in the 1950s, and so it suddenly became interesting and worth writing about: that's why I have written ten books about it.

6. Why is inequality bad for Britain and what can we do to combat this?

There is a huge amount of circumstantial evidence that unequal countries perform worse. Exam results really matter in unequal countries and that's why for GCSE Maths you will be taught how to get the highest grades in your exams but not how to actually do Maths. If we look at Finland, by 14 or 15 children will speak four to six languages and be very good at maths but they do not have to face any major exams. Their mental health is very good, and they are set to reach net-zero by 2035. They are also a very hard-working society and young people are much

freer to do what they want. For example, a male nurse in Finland will be well paid and not frowned upon. However, in England, nurses in general are not paid very well and a male nurse will be judged. Finland is so equal. Humans are not well-adapted to live in an unequal environment, and it does not bring out the best in us as a species. We don't have a country in Europe yet where the level of equality has damaging effects, but you would expect to see this at some point. More unequal countries, like the US and UK are more likely to have people at the top of society who think they are geniuses but are not very able like Donald Trump, or fall to dictatorships. Since December 2019, Finland has been run by a coalition of five women, four of them are in their 30s and very able, but they never talk about their ability. Britain needs to strive to become more equal.

7. What should the government do about the current housing crises/situation here in the UK?

They need to see it as a problem and actually believe in it. You do not by accident, when we were in the EU, have the worst rates of homelessness. It is a lack of caring from the government. We actually have enough houses in all of the UK to home everyone, but they are being distributed more and more unequally so more houses only have one person where there could be three or four living there. There has also been a big rise in second or third homes since the 1980s meaning an increase in unequal use of the housing stock. The fundamental problem is that we are ruled by people who do not believe there is a problem and who believe the market will sort itself out.

8. What is your view on private schools and in your opinion do they exacerbate inequality?

We have the highest proportion of private schools in Europe and we spend between a quarter and a third of funding secondary school education on the 7% of children that go to private schools. It is not an efficient way of spending money. If we look at Finland, they spend most of their funding on the least able 25 percent of children and hence head all the league tables. Only Chile spends more on private school education than the UK in the OECD and they are a dysfunctional society with large scale riots in November and December 2019. Private schools were great hundreds of years ago for educating people to run parts of the empire like Nigeria, but the empire exists no longer, it does not work anymore. I am against abolishing private schools but believe the UK should unravel them through a series of private schools requesting to become state run.

This would see a reduction from 7% to 4% of children being privately educated. You then continue with this process slowly and try to put ourselves in a situation like Germany's where the state schools are of such high standard they do not need private schools.

9. Climate change finally seems to have become a priority issue for governments globally, what are your thoughts on this?

Climate change is certainly rising; however, I believe the prospect of nuclear war was a bigger threat in the 1980s. These two situations are rather comparable in that they are both the slow dawning of realisation that we do not know the repercussions of each situation but that what we know is bad enough. This happened with nuclear weapons and will happen with climate change too.

10. Where is your favourite place you have travelled to?

I would say Okinawa which is a little island south of Japan where the longest living people in the world live.

11. I understand one of your favourite pastimes is building sandcastles. Where is your favourite beach to do this?

Okinawa is not very good for sandcastles as it has gritty sand. My favourite place to build sandcastles is actually on the beach in Hawaii. On Hawaii people don't build sandcastles and as I build them in a particular way people are quite stunned as they've never seen it before.

12. You have written a lot of books, which one are you most proud of and why?

I am most proud of a tiny book called the Central Line, partly because its fictional and its short but also that it's about life along the Central Line. It starts near hear in West Ruislip. It looks at families along every stop and how they change as it moves along the line. I chart how fast GCSE results drop as you move down certain past of the line, how life expectancy changes, house prices, etc. There is a 'banker mountain' at one point on the Central Line. It's trying to get people to imagine the invisible landscapes of London through statistics.



RIVERS OF ICE: GLACIERS

THE GEOGRAPHY OF GLACIAL SYSTEMS



**KARAN
SHAH**

Upper Sixth, Year 13

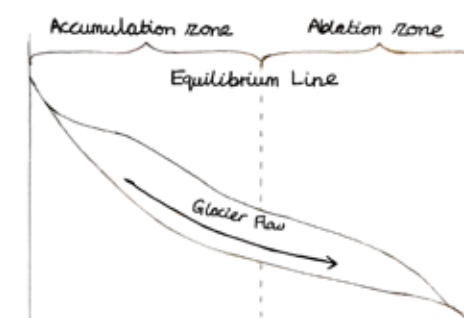
A glacier is a mass of land ice that deforms under its own weight and flows downslope. It moves just like a river, abrading the landscape below it but more slowly and shapes a very different landscape. Approximately ten percent of the Earth's land is covered by glaciers, of which eighty five percent are located in Antarctica, shared between its ice sheets. There are two types of glaciers; corrie glaciers are small glaciers found in bowl-shaped depressions on the sides of mountains. Valley glaciers are much larger and extend down to fill valleys between mountains. Small tributary glaciers often feed into valley glaciers and so they can often be referred to as rivers of ice.

Glacial systems have inputs, outputs, stores and transfers just like any other system. The input into a glacial system is snow in the form of precipitation or avalanches. The output of mass is caused by evaporation, sublimation, and strong winds. Ice can also melt and flow out as meltwater or through the process of calving - when icebergs break off a glacier into a sea/lake/ocean.

Accumulation is the total inputs and ablation is the total outputs in a glacial system. The balance between accumulation and ablation over a year is known as the glacial budget. *The diagram I have drawn illustrates this.*

The zone of accumulation is located at the top of a glacier, where inputs (mostly snow) is greater than outputs, causing a gain in mass. The zone of ablation is located at the snout of the glacier and is where outputs are greater than inputs, causing mass to be lost. When net ablation and accumulation are equal, the glacier is said to be in equilibrium. During winter months, when temperatures are cooler, accumulation is greater and so the glacier advances. However, due to higher temperatures in summer, greater ablation causes the glacier to retreat, or rather 'deflate'.

Last summer I visited the Lake District. The Lake District is home to many landforms of glacial erosion and the pre-glacial drainage system. The large ribbon shaped lakes of Ullswater, Windermere, Coniston and Thirlmere are located in glacially deepened valleys. Tarns are small circular lakes which are found at higher altitudes, where snow accumulation would have been the highest, hence becoming the source of corrie glaciers. These glaciers deepened the original hollows, leaving behind meltwater when the ice melted, forming small lakes. The Helvellyn mountain range runs north to south with the highest peak of Helvellyn reaching an altitude of 950m. During the period of ice accumulation, erosion of corries increased. As these corries were concentrated around the same region, glacial erosion left behind knife edged ridges separating the corries. This has resulted in a ridge of over 600m in elevation extending for 11km along the Helvellyn range. Many impressive landscapes are formed by glacial processes, other examples include Grand Teton, Yellowstone and Loch Lomond.



Inputs:
Snowfall
Avalanches

Outputs:
Evaporation
Sublimation
Meltwater runoff
Strong Winds
Calving

Karan Shah,
U6th, Year 13



Jacob Shohet, Thirds, Year 7
Babbacombe, Devon



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