

**SATURDAY 28 SEPTEMBER 2019**

**SAT 19:00 Britain's Secret Seas (b011pkq2)**  
The Bustling South

In the final programme of the series, explorer Paul Rose, marine biologist Tooni Mahto and underwater archaeologist Frank Pope explore our busy southern shores.

As one of the world's busiest shipping lanes, our southern seas are littered with wrecks. Outside Poole harbour, the team join an archaeological excavation of a mysterious 17th-century ship, bearing incredibly ornate carvings of a merman. Frank reveals this is one of the most important underwater discoveries since the Mary Rose. Paul joins the dive team working on the wreck to try to discover where this ship came from. But it's a race against time as the timbers are being destroyed; Tooni wants to find out why.

Frank and Tooni examine how we balance the needs of marine life with those of people when the two come into conflict. Studland Bay in Dorset is home to a thriving population of spiny seahorses living amongst the rare eelgrass beds. Only identified as breeding in the area seven years ago, the intensive use of the bay, boat moorings and pleasure boats' anchors are threatening the seahorses' fragile eelgrass habitat.

Paul dives to two wrecks in the search of the mighty conger eel to find out if, when he comes face to face with one, these incredible beasts will live up to their fearsome reputation.

As the tourists hit the roller coaster and dodgems on Brighton Pier, they know little of the wonder beneath them. Tooni dives underneath Brighton Pier to reveal one of the best places on the south coast to see a great variety of our native marine life.

Out in Lyme Bay, Frank dives the wreck of an experimental World War II submarine.

**SAT 20:00 Life in the Air (b077ymy7)**  
Crowded Skies

With the help of some surprising creatures from around the world, this series sets out to discover how animals take to the air, defying the force all airborne animals must conquer, gravity.

This episode features a creature that creates sound out of thin air with the world's fastest courtship display and arguably the world's most aggressive bird.

In a South American jungle, there's 'hunt and evasion' flying during the night, as bats and moths fight for the upper hand in one of the world's oldest arms races.

Plus a camera films a giant flock to unlock the secrets that keep half a million birds from colliding in the same air space.

**SAT 21:00 Julieta (m0008z8p)**  
On the eve of leaving Madrid for Portugal with her partner Lorenzo, Julieta has a chance encounter with a childhood friend of her daughter. This forces her to confront the past as she begins a journal to her estranged grown-up daughter who cut contact 12 years previously.

In Spanish with English subtitles.

**SAT 22:30 Detectorists (b06l11tj)**  
Series 2

Episode 1

Andy's been thinking about internet dating. Not for him, but for his friend Lance who's still not over the departure of his ex-wife. A mysterious stranger arrives to tempt the Danebury Metal Detecting Club in more ways than one.

**SAT 23:00 Detectorists (b06n9q3h)**  
Series 2

Episode 2

Andy spots something suspicious and Sophie's cracking on with her new friend at the library. The club is visited by the local mayor on a matter of some delicacy, and some old enemies seem unusually interested in Peter's quest to find his grandfather.

**SAT 23:30 Detectorists (b06nxyd8)**  
Series 2

Episode 3

Russell and Hugh embark on their mission to recover the

mayor's chain of office from the car park in Barnfather Woods, while Sophie proves she's still very bad at spying. Both Becky and Lance have something important to tell Andy.

**SAT 00:00 Top of the Pops (m0008rmw)**  
Gary Davies and Peter Powell present the pop chart programme, first broadcast on 30 June 1988 and featuring Hazell Dean, Bruce Springsteen, Tracy Chapman, Matt Bianco, Salt-N-Pepa, T'Pau, The Fat Boys and Chubby Checker, Bros and Glenn Medeiros.

**SAT 00:30 Top of the Pops (m0008rm2)**  
Janice Long and Simon Mayo present the pop chart programme, first broadcast on 7 July 1988 and featuring the Communards, the Mac Band ft. the McCampbell Brothers, Everything But The Girl, INXS, Eighth Wonder, Glenn Medeiros and Transvision Vamp.

**SAT 01:00 Spiral (b09kl71v)**  
Series 6

Episode 1

The detective squad must identify a murdered male torso to keep the case as Laure returns early from maternity leave. A high-profile criminal trial tempts jaded Josephine, while magistrate Roban grows distracted.

Fresh intrigues with the gripping French drama about the imperfect people upholding law and order in Paris.

In French with English subtitles.

**SAT 02:05 Spiral (b09kl71x)**  
Series 6

Episode 2

Investigating their victim, Laure and Gilou reunite with a superior in a troubled suburb. Lawyer Josephine pushes her client to plead guilty. Roban probes a male prostitute's suspicious death.

In French with English subtitles.

**SAT 03:05 Britain's Secret Seas (b011pkq2)**  
[Repeat of broadcast at 19:00 today]

**SUNDAY 29 SEPTEMBER 2019**

**SUN 19:00 The Women's Football Show (m0008z39)**  
2019/20

29/09/2019

Kelly Somers presents highlights of Arsenal v Brighton in the Women's Super League. Plus coverage of Manchester United v Liverpool, West Ham's big game at the London Stadium against Tottenham, and analysis of all the rest of the action across the league.

**SUN 19:30 South Downs: England's Mountains Green (b08fsbtk)**

Peter Owen-Jones takes us into the heart of the UK's newest national park - the South Downs. Following the South Downs Way along the spine of the park, from the famous Seven Sisters cliffs to Winchester - the ancient capital of England - Peter experiences an extraordinary year exploring the park's stunning landscapes, rich history, wildlife and people. What emerges is a portrait of one of Britain's most iconic landscapes, described by William Blake as 'England's mountains green'.

**SUN 20:30 Upstream (m0008z3c)**

Upstream is a film by writer Robert Macfarlane and director Rob Petit. The film, which was shot entirely from the air, follows the course of the River Dee in Scotland all the way to its source in the Cairngorm mountains, the highest of any river in Britain. With a prose poem written especially for the film by Macfarlane (voiced by Julie Fowlis) and an original score by the Oscar-nominated composer Hauschka, the film takes as its epigraph the words of the Scottish writer Nan Shepherd (1893-1981): 'One cannot know the rivers till one has seen them at their sources,' wrote Shepherd, 'but this journey to sources is not to be undertaken lightly.' (The Living Mountain, 1977).

Eerie, hypnotic and experimental, this groundbreaking polyphonic film weaves together field recordings of the river, and the birds and creatures which live along it, the place names and stories - dark and light - of the Cairngorms, creating a 'songline' that draws the viewer up, against the flow, into

wildness, winter and strangeness.

**SUN 21:00 Rhyme & Reason: BBC Introducing Arts (m0008z3f)**

Poet Lemn Sissay presents a selection of short, vibrant films from a new generation of artists who are inspired by poetry and the spoken word.

This is an opportunity to feel the rhyme and reason of today's Britain as artists reflect what is important to them, from gender identity to first dates and from the labyrinth of the internet to early morning wake-up calls.

As Sissay notes, 'When you write a poem, part of the magic is that you never know where it's going to take you.' Here is a chance to meet emerging artists who aren't afraid to say what's on their minds.

**SUN 22:00 Lost Films of WWII (m000856x)**  
Series 1

Episode 1

The story of Britain during World War II, retold from a uniquely vivid and personal perspective using rarely seen home movies. Rediscovered and shown together for the first time, old cine films are interwoven with testimony from both members of the film-makers' families and those who lived through the war to give a first-hand account of life during conflict.

From footage shot by a Middlesborough dentist, who witnessed the rise of Nazism on a family holiday to the continent in 1939, to the images of the evacuation of Dunkirk secretly recorded by a young naval officer, the films show momentous events through the eyes of the ordinary people caught up in them.

In the first episode, the progress of the first half of the war is told through a series of films that include fascinating footage of the Home Guard in training in the village of Thornton in Yorkshire, moving images and accounts of the devastation of Sheffield during the Blitz, and the astonishing moment a doctor in Kent turned his camera skywards to film the Battle of Britain from his garden.

The toll the war took on servicemen is revealed through poignant depictions of the RAF's Coastal Command 502 Squadron's participation in the Battle for the Atlantic. Meanwhile, images of the home front adapting to war as civilians recorded their changing life at home and at work are a striking reminder of Britain in a different era. With much of the footage in colour, the past leaps to life with immediacy and reveals how world events impacted on the individual.

**SUN 23:00 Lost Films of WWII (m0008c3m)**  
Series 1

Episode 2

The story of the last years of World War Two, and its immediate aftermath, told through a series of films shot by both civilians and members of the armed forces. They include fascinating footage of Warship Week fundraising events at home, digging for victory, life in the Lincolnshire town of Louth and a first-hand account by an SIS covert operations agent on active duty in the field.

This second episode includes the British breakthrough at El Alamein, revealed by a sergeant who filmed the guns pounding the German positions, and the most complete film of a Bomber Command squadron in action, made by a serviceman stationed at a Lincolnshire base.

Footage shot secretly by islander Olive Thompson offers a unique insight into life under German occupation, while a guard with an interest in home movie-making captured the daily routine of German prisoners of war in POW Camp 633 (Boughton Camp, New Ollerton, Nottinghamshire).

These lost films are a striking reminder of Britain in a different era. With much of the footage in colour, the past leaps to life with immediacy and reveals how world events impacted on the individual at home as well as in action.

**SUN 00:00 The Sinner (b09s52q3)**  
Series 1

Episode 1

Cora Tannetti is a young mother who, after being overcome by an inexplicable fit of rage, commits a startling and very public act of violence without understanding why. Detective Harry Ambrose is determined to find the answer.

**SUN 00:45 Spiral (b09ltxy7)**

Series 6

Episode 3

Josephine is shaken after an assault. Roban resorts to an off-the-record test to build his case. Gilou and Laure grill two apparently reformed brothers for links to the dead cop.

In French with English subtitles.

**SUN 01:45 Spiral (b09ltxy9)**  
Series 6

Episode 4

Told a guilty secret, Laure plots to correct matters, but must elude Tintin's dogged detective work. Josephine struggles to prove her client's claims in court. Roban must confront a colleague, and a health issue.

In French with English subtitles.

**SUN 02:50 South Downs: England's Mountains Green (b08fsbtk)**  
[Repeat of broadcast at 19:30 today]

**MONDAY 30 SEPTEMBER 2019**

**MON 19:00 Beyond 100 Days (m0008z7f)**  
Series 1

30/09/2019

The latest news, exploring the day's events from a global perspective.

**MON 19:30 James May: The Reassembler (b076np2b)**  
Series 1

Lawnmower

James is faced with the 331 pieces that make up a 1959 petrol lawnmower. The Suffolk Colt helped make mowing accessible to the masses by producing a smaller and affordable machine to keep our nation's lawns at regulation height. As this is a petrol lawnmower, James's first task is to put the engine back together before he gets to grips with the gearing, the clutch and the blades themselves. Armed only with his toolbox and an endless supply of tea, James experiences the highs and lows only possible when attempting to put history back together again, piece by piece.

**MON 20:00 Cake Bakers and Trouble Makers (b063f2m0)**  
In celebration of the WI's centenary, Lucy Worsley goes beyond the stereotypes of jam and Jerusalem to reveal the surprisingly radical side of this Great British Institution.

Beginning on the Welsh island of Anglesey, where the WI's first meeting was held in a garden shed in 1915, Lucy discovers that its humble origins were no bar to the movement's grand ambitions. Some of the institute's founding members were suffragettes and it saw itself as a campaigning organisation, engaged in the fight for women's rights. Lucy explores some of the WI's most important campaigns, like its 1918 crusade for decent housing and its remarkably radical fight for equal pay in 1943.

Lucy uncovers the crucial role the WI played on the home front during both world wars. In the Second World War, the institute's 350,000 members took a leading role in feeding a hungry nation. With the help of some modern WI ladies, Lucy recreates a wartime institute jam factory, thousands of which were set up by branches up and down the country to produce hundreds of tonnes of jam.

When she traces the story of the WI into the post-war period, Lucy discovers that membership began to decline as the institute struggled to cope with the social revolution of the 1960s. To find out how the WI reinvented itself for the 21st century, Lucy meets some of the members who combatted the WI's staid and stodgy image by stripping naked for a charity calendar in 2000. She also joins a protest alongside the Shoreditch Sisters, one of a number of recently formed new-wave WIs whose proudly feminist stance is attracting a new generation of younger members.

**MON 21:00 Storyville (m0008z7h)**  
Tiananmen: The People V the Party

On June 4, 1989 the world's biggest, longest, and most famous pro-democracy demonstration was brought to a tragic end. The images from those final bloody days remain potent and the

death toll is still disputed. In Tiananmen: The People V the Party, eyewitness accounts and leaked secret documents provide a deeper understanding of how the events of those seven weeks unfolded in the Square and behind the scenes, changing the course of Chinese history.

**MON 22:30 I Was There: Kate Adie on Tiananmen Square (b0b5y917)**  
Kate Adie re-examines her historic coverage of the massacre in Tiananmen Square, Beijing, in June 1989.

In a long-form interview, Kate recalls how she was wounded by gunfire and narrowly escaped death herself as she and her cameraman remained in the line of fire while an estimated 2,000 pro-democracy demonstrators were shot down by Chinese government troops.

Kate reviews the reports she made on the ground, with additional insight from leading historian Professor Steve Tsang, and draws on the BBC's archive to assess how film-makers have portrayed China before and after the upheaval.

**MON 23:30 The Story of China (b06ygnlh)**  
Ancestors

Michael Wood explores the history of the world's newest superpower, from its ancient past to the present day. Starting in Wuxi, Michael joins the Qin family reunion, when 300 relatives gather to worship their ancestors on Tomb Sweeping Day. 'Like the nation, the family has been through so much,' one says. 'Now everyone wants to know - what are our roots?'

To answer that question, Michael journeys to the plain of the Yellow River, where he joins a million pilgrims at the shrine of ancient goddess Nüwa, who legend says made the first people from the yellow mud of the Yellow River.

Looking for the origins of the Chinese state, he visits the excavations at Erlitou and sees an exquisite turquoise dragon sceptre from 2000 BC. China's first writing is found on 'oracle bones' dug up from the Shang royal tombs at Anyang in the 1920s. At the Beijing Planetarium, Michael travels back in time as astronomers plot the planetary conjunction that the ancients believed foretold the overthrow of the Shang Dynasty.

Next, the Age of Philosophers and Confucius, whose book Analects has had greater influence worldwide than even the Bible, according to some. In Xi'an, we hear how the First Emperor united China and created the authoritarian Qin state that gave us the word China.

Finally, Michael returns to the temple fair in Henan for a dramatic night ceremony to give thanks to the ancestors. China, Michael concludes, is rising again, not just because of its economic strength, but because of the incredible solidarity of the Han Chinese view of their own civilisation, their sense of family and, of course, the presence of the ancestors.

**MON 00:30 The Incredible Story of Marie Antoinette's Watch with Nicholas Parsons (b07xtbhr)**  
Nicholas Parsons, Just a Minute host and stalwart of the entertainment world, explores his life-long enthusiasm for clocks when he goes in search of the most valuable and famous watch in the world.

The so-called Marie Antoinette, once the target of one of the biggest museum heists in history, was the masterpiece made by 18th-century genius Nicholas Breguet for that doomed queen.

Tracing the enthralling story of Breguet's rise to fame, Parsons visits Paris and Versailles, and the vaults of today's multimillion-pound Breguet museum. Exploring the innovative and dazzling work of the master watchmaker, Parsons unravels the mystery behind the creation of his most precious and most brilliant work.

Parsons then heads to Israel to discover how, in the 1980s, the world's most expensive watch was stolen in a daring heist and went missing for over 20 years.

Revealing a little-known side of one of our favourite TV and radio hosts, the film offers a glimpse into Parsons's own private clock collection while also telling an enthralling tale of scientific invention, doomed decadence and daring robbery.

**MON 01:30 Spiral (b09mb7v8)**  
Series 6

Episode 5

Laure is sure a teen girl's death is linked to the Mercier murder, but proof is elusive. Tintin is stressed by his son's misbehaviour, while Josephine cracks before a crucial court appearance.

In French with English subtitles.

**MON 02:30 Spiral (b09mb7vb)**  
Series 6

Episode 6

Difficulties escalate for the detectives seeking their teen victim's best friend. A sexual harassment hearing proves revealing of Josephine's feelings. Roban and Laure learn of police corruption.

In French with English subtitles.

**TUESDAY 01 OCTOBER 2019**

**TUE 19:00 Beyond 100 Days (m0008zcc)**  
Series 1

01/10/2019

The latest news, exploring the day's events from a global perspective.

**TUE 19:30 James May: The Reassembler (b076wf8f)**  
Series 1

Telephone

James tackles a 1957 Bakelite dial telephone - 211 pieces, most of them very small indeed, must be reassembled in the correct order if this telephone is ever to ring again. From the receiver with its carbon filings that enable speech to be amplified, to the electrical pulses created by the dial itself that connect the phone to the outside world, James soon discovers that every single piece of the telephone played a crucial role in revolutionising communication around the world.

**TUE 20:00 England's Forgotten Queen: The Life and Death of Lady Jane Grey (b09m5rpg)**  
Series 1

Episode 3

Jane has been installed in the Tower of London by a powerful cabal of men in the royal court. They want to keep the Catholic Mary Tudor from power. Meanwhile, Mary has assembled an army and is ready to fight back.

Led by the manipulative Duke of Northumberland, Jane's forces have assembled close to Mary's castle at Framlingham. Poised on the brink of battle, the two sides are evenly matched and the outcome hangs by a thread. When a key supporter of Jane's defects to Mary's side, taking with him thousands of followers, the balance tips. The Duke of Northumberland is thrown into confusion and the country holds its breath to see what will happen next.

On the final day of Jane's nine-day reign, the men who placed her on the throne abandon her and switch sides to join Mary. Their ringleader is Jane's own uncle, the Earl of Arundel.

Jane and her father, the Duke of Suffolk, are prisoners in the Tower as Mary enters London in triumph.

Jane is put on trial, but at first her life is spared. It is only when Jane's father joins a second rebellion that Mary takes action. She decrees that Jane, her husband and her father should be executed.

Helen Castor discovers that despite her reign lasting only nine days, Jane did leave a legacy - when Elizabeth I finally inherits the throne the lessons she learned from observing Jane's struggles help her to rule for 44 years. And, crucially, that Jane opened the door for a woman to rule England in her own right.

**TUE 21:00 Spotlight on the Troubles: A Secret History (m0008zcf)**  
Series 1

Episode 4

New revelations about how agents of British intelligence infiltrated the Irish Republican Army. By 1979, the British security forces believed the IRA had become so security conscious that they were impossible to penetrate. But reporter Jennifer O'Leary reveals how one weakness in the IRA's internal security was exploited to unlock many of the group's secrets. She charts how Britain used informers and combined that advantage in secret intelligence with the use of special forces to take on one of the IRA's deadliest units - a strategy that culminated with the Loughgall ambush, when the SAS killed eight IRA men attacking a police station. The programme shows that the aftermath of the attack only made the IRA's informer problem worse.

**TUE 22:00 Voyages of Discovery (b0074t4k)**

Ice King

Explorer Paul Rose tells the story of his hero Fridtjof Nansen who, in 1892, announced a daring plan to be first to the North Pole, an idea considered so off-the-wall that no scientist would volunteer to join him on a venture they believed was nothing short of suicide.

He allowed his ship to become stuck in the crushing pack ice, hoping it would drift to the Pole, and then set off on foot across the frozen wastes. Nansen became the forefather of polar exploration, inventing practical techniques that today allow people to survive, travel and work in the most hostile and forbidding places on our planet.

**TUE 23:00 The Last Explorers (b017zqnn)**

John Muir

Neil Oliver follows in the footsteps of four Scottish explorers who planted ideas rather than flags - ideas that shaped the modern world we know today.

Set in the spectacular Yosemite Valley in California, this is the story of the father of the modern conservation movement and one of the founders of America's National Park movement. John Muir was a 19th-century adventurer who explored the natural world and devoted his life and work to persuade others to see the sacred beauty of his discoveries.

**TUE 00:00 Ireland's Treasures Uncovered (b070w5kh)**

The story of the iconic Irish artefacts that have helped to shape and create modern Ireland, both north and south.

The programme reveals the surprising tales behind treasures such as the Tara Brooch, the Broighter Hoard, the Waterford Charter Roll and others, revealing new stories behind the artefacts that we thought we knew. It also reveals the most recent astounding finds that are adding to the list of Ireland's Treasures.

Using key access to Ireland's two largest museums, in Belfast and Dublin, the programme brings together archaeologists and curators who have spent their lives working to understand the true context for these emblematic treasures.

**TUE 01:00 The Art That Made Mexico: Paradise, Power and Prayers (b09hm1y8)**

Series 1

Paradise

Alinka Echeverria reveals the way in which Mexican artists shook off European artistic influence to find a distinctive voice, expressed through landscape painting, and reconnected with pre-Hispanic subject matter. The murals of Teotihuacan and illustrated Aztec codices show how nature was the reference point for their worldview, their power structures and their calendars. But following the conquest in the 16th century, the Spanish 're-educated' indigenous artists to aspire to European aesthetics, and for nearly 300 years after conquest, the art of what was called New Spain looked a lot like the art of old Spain.

A century after independence in 1810, artists began to depict Mexico's ancient foundation myths, including the symbolic volcanoes that dominate the Valley of Mexico. Indigenous people, their land and lives were no longer taboo. Following the Mexican Revolution that began in 1910, landscape paintings established a new style that was resolutely Mexican and confirmed the re-established connections between Mexico's indigenous population and their land. Forces of nature and Mexico's landscape continue to be integral to the Mexican sense of artistic identity.

**TUE 02:00 Spiral (b09p6y5g)**

Series 6

Episode 7

Revenge has repercussions for Josephine. The detective squad, to redeem their reputation after the disastrous Roma camp raid, dig dirt on the corrupt coppers. Laure must make choices for baby Romy.

In French with English subtitles.

**TUE 02:55 Spiral (b09p6y5j)**

Series 6

Episode 8

Watching assorted suspects stretches the detectives' resources, but yields results. Josephine challenges Roban's ruling on the

male escort case. Gilou has a heart-to-heart with Laure.

In French with English subtitles.

**WEDNESDAY 02 OCTOBER 2019**

**WED 19:00 Beyond 100 Days (m0008yzk)**

Series 1

02/10/2019

The latest news, exploring the day's events from a global perspective.

**WED 19:30 James May: The Reassembler (b076wgvx)**

Series 1

Electric Guitar

James concludes his quest to truly understand everyday objects by putting them back together piece by piece with an electric guitar.

147 pieces must be reassembled carefully and in the correct order, which will entail soldering, extensive use of James's precision Japanese screwdrivers and some fiddly electronics.

The electric guitar transformed the music industry and society itself and, channelling his namesake Brian, James will plug in his reassembled guitar and hope he put all the bits together correctly as he gets ready to perform one of most unexpected guitar solos of all time.

**WED 20:00 Dig WW2 with Dan Snow (b01jc67j)**

Episode 3

In our third and final episode of Dig WW2, historian Dan Snow travels to Lough Foyle to dive on a Flying Fortress that never made it on a bombing raid. Unearthing stories of the crew, we hear how they miraculously survived the crash helped by a local woman and her sailboat. He then heads to the shores of Lough Neagh where, at RAF Cluntoe, pilots and crew were trained for flying missions all over Europe. Finally, he reveals the climactic end of the Battle of the Atlantic on the River Foyle docks, where the German navy surrendered their U-boat fleet and from where they set out to be sunk off Malin Head. Dan returns to this U-boat graveyard to dive on one very special submarine, which could have spelled victory over Germany, but arrived just too late.

**WED 21:00 A Day in the Life of Earth (m0001vjc)**

If you think the Earth takes millions of years to change, it's time to think again! Presented by Hannah Fry, this TV special reveals how much our planet can change in just 24 hours. A new era of science allows us to watch as the Earth moves, breathes, shrinks and grows right under our noses. The story is driven by scientists and explorers, and harnesses cutting-edge data, newly launched satellites and blue chip CGI to show us the true personality of the Earth... more dynamic than it's ever been seen before. Every minute new land is born, every hour tonnes of rock arrive from space, before you go to sleep a cloud of dust from the Sahara will have fertilised the Amazon, and while all that was happening, the ground under your feet moved half a metre. As Hannah explains, Earth's daily changes are all linked in surprising ways, and - more importantly - we would not be able to survive on the planet without them.

We start with the inner earth - the invisible but hugely dynamic system beneath our feet which constantly rebuilds the planet's surface. On the island of Stromboli, we climb a volcano with geologist Professor Chris Jackson to see how much lava a single volcano can produce on a daily basis and how that lava builds new land. Chris also reveals what powers the inner earth - radioactive decay beneath of our feet, where heavy elements are constantly decaying into lighter ones - a process that produces the equivalent energy of 27,000 Hiroshima bombs every day. This energy is a crucial driver to plate tectonics and therefore volcanic activity. And the speed with which volcanic activity makes land is crucial - if it didn't create land faster than erosion destroys it, we would have no land to live on and the world would be one giant ocean.

The story doesn't stop with new land being made. It's also constantly being moved. We reveal how the moon not only causes huge movements of water in the ocean - which we know as the tides - but also creates waves of solid rock on land, known as 'solid earth tides'; a ceaseless shape change which we never notice. When amateur divers Ramon and Veronica Llana found red dust in an underwater cave in the Bahamas, little did they know how far it had travelled to get there. Scientist Charlie Bristow has tracked the source of the dust to the Sahara and worked out how huge quantities of solid mud get airborne and carried across the Atlantic - half a million tonnes of it per day! Much of it ends up in the Amazon, where it helps

fertilise the rainforest - the lungs of the planet. Meanwhile, in the polar regions, mountains are also being moved - by glaciers, which grind down rock 24-7 and eventually deposit it in the ocean, where it helps trigger another daily change - this time to life.

In the ocean, we follow the daily growth of phytoplankton - microscopic plant life fuelled by the nutrients put into the ocean by erosion. Five billion tonnes of it grow every day and, like all plants, absorb carbon dioxide and release oxygen. In fact, there is so much phytoplankton in the ocean that they are responsible for every second breath we take. The explosive growth of phytoplankton triggers another global change and the biggest mass movement of animal life known to science - the daily migration of the zooplankton, which rise up from the depths every night to feed on the plants. In Florida, we get underwater with a group of intrepid divers, who plunge into the pitch-black ocean for a chance to see this global phenomenon up close. We also look at how science is now able to track the growth of plants on land using satellites. If you could put all the growth in all the world's forests into one imaginary tree, you would get a single tree three km tall in just one day. But with all this growth, there is an inevitable flipside - fire. The film goes behind the scenes with the US Forest Service as they tackle the biggest wildfire in California's history. Every day an area of forest twice the size of the Grand Canyon National Park is burnt down.

Finally, Hannah Fry gets us to look onwards. The Earth is not a bubble - it's part of a bigger cosmic system that every day messes with the composition of our planet. We lose atmospheric gases like hydrogen and helium at the rate of 1kg per second to space. And once they're gone, they're gone. In fact, when you look at the Northern Lights, you're actually looking at helium being lost. But Earth does get something back from space. We join a group of amateur astronomers to watch the Geminid meteor shower in the deserts of California. This heavenly light display is actually revealing a process that goes on all day, every day. The Earth is constantly picking up space dust - an estimated 60 tonnes of it every 24 hours. But perhaps the biggest change of all is the one that few of us are even aware of. Our whole galaxy is moving through the cosmos at two million km per hour.

It really is a different planet every day. If it weren't, we wouldn't be on it!

**WED 22:00 Rik Mayall: Lord of Misrule (b04w7m97)**

Comedian Rik Mayall died suddenly on 9 June 2014. Mayall's blend of rocket-fuelled physical comedy, surrealism, subversive satire and pompous punk wit left a body of work that spanned four decades. Mayall's characters include the Black Country's investigative nerd Kevin Turvey, Felicity Kendal-adoring student and 'People's Poet' Rik in The Young Ones, ruthless MP Alan B'Stard in The New Statesman, seedy loser Richie in Bottom, and larger-than-life characters Robin Hood and flying ace Lord Flashheart from Blackadder.

Narrated by Simon Callow, this programme salutes Rik Mayall and celebrates his part in the UK's comedy history using rare and unseen archive footage. It also features contributions from people who knew or admired him, including Michael Palin, Simon Pegg, Lenny Henry, Ben Elton, Alexei Sayle, Christopher Ryan, Tim McInnerny, Jools Holland, Ruby Wax and Greg Davies.

**WED 23:00 Stories from the Dark Earth: Meet the Ancestors Revisited (b01sgx9m)**

Sacred Women of the Iron Age

Archaeologist Julian Richards returns to some of his most important digs to discover how science, conservation, and brand new finds have changed our understanding of entire eras of ancient history. Julian goes back to the excavation of two very different Iron Age women - the possible sacrifice of a teenage girl from the Cotswolds, and the extraordinary chariot queen whose well preserved possessions are leading to some astonishing new conclusions about Iron Age belief, all because of a mirror and its other-fur bag.

**WED 00:00 Bob Geldof on WB Yeats: A Fanatic Heart (b076qphj)**

Musician and advocate Bob Geldof examines the life and work of one of the 20th century's greatest poets, William Butler Yeats. Geldof argues that as a poet and statesman, at the vanguard of a cultural revolution, Yeats brought about immense change in Ireland's struggle for independence, without firing a bullet.

Written by Geldof and Roy Foster, this incisive and moving documentary features readings by Bill Nighy, Van Morrison, Richard E Grant, Colin Farrell, Bono, Edna O'Brien, Ardal O'Hanlon, Noel Gallagher and Liam Neeson.

**WED 01:40 Spiral (b09q4f9s)**

Series 6

Episode 9

Violence flares after a cop's shooting of an unarmed man. A sense of injustice fuels Josephine's aggression in the Bodin case and Tintin's feelings on being kept in the dark.

In French with English subtitles.

**WED 02:40 Spiral (b09q4f9v)**

Series 6

Episode 10

No closer to arresting Drissa Camara or the corrupt cops. Laure and her team seek missing teen Maria. Roban is rattled to be testifying in court in his own defence, cross-examined by Josephine.

In French with English subtitles.

**THURSDAY 03 OCTOBER 2019****THU 19:00 Beyond 100 Days (m0008zc1)**

Series 1

03/10/2019

The latest news, exploring the day's events from a global perspective.

**THU 19:30 Top of the Pops (m0008zc3)**

Peter Powell and Andy Crane present the pop chart programme, first broadcast on 21 July 1988. Featuring Kim Wilde, Everything but the Girl and S-Express.

**THU 20:00 Greece with Simon Reeve (p03gk861)**

Episode 2

In the second episode of this two-part series, Simon Reeve travels from the Peloponnese peninsula to the rugged and mountainous north of the country.

To learn more about Greece and the Greeks, he meets an extraordinary cast of characters, from a group of rebel monks to conservationists caring for an injured bear cub. Getting behind the picture-postcard image of this beautiful country, he finds out how the Greeks are coming to terms with a seemingly endless crisis.

**THU 21:00 Eugenics: Science's Greatest Scandal (m0008zc5)**

Series 1

Episode 1

Science journalist Angela Saini and disability rights activist Adam Pearson, reveal that eugenics - the controversial idea that was a driving force behind the Nazi death camps - originated in the upper echelons of the British scientific community.

The presenters uncover how shocking eugenic beliefs permeated the British establishment and intelligentsia; supporters included figures such as Winston Churchill and Marie Stopes. They see how eugenics influenced the Mental Deficiency Act of 1913, which resulted in thousands of disabled people being locked up for decades. Eugenics shaped immigration law, education policy and even town planning. The documentary uncovers disturbing links between British universities and German race scientists in the first half of the 20th century, and investigates how eugenics fed into the racist ideologies of Nazi Germany.

**THU 22:00 The Science of D-Day (b045gr8m)**

In June 1944, one of the greatest amphibious assaults in history was launched from the south coast of England. Within a matter of hours, 7,000 vessels had landed 156,000 troops on the beaches of Normandy. It was a manoeuvre that changed the course of the war and tested innovations in science and engineering for the first time.

In this programme, engineer Rob Bell looks at the nuts and bolts which made such a staggering invasion possible - from giant troop-carrying gliders to tanks that could drive on water - and how necessity really did become the mother of invention. Like all new inventions, not all of them worked and resulted in devastating consequences. We find out why. This is the science of D-Day.

**THU 22:30 World Athletics Championships (m0008zc9)**

Doha 2019

Day 7 - Part 3

Continued coverage from the 2019 World Athletics Championships in Doha featuring Katarina Johnson-Thompson's bid for heptathlon glory. Gabby Logan presents all the action from the Middle East with expert analysis by British Olympic heptathlon gold medallists Jessica Ennis-Hill and Denise Lewis. Johnson-Thompson is taking on reigning European, world and Olympic Nafi Thiam of Belgium. Can the Briton spring an upset in Doha?

**THU 23:00 Bute: The Scot Who Spent a Welsh Fortune (b08y60r0)**

John Patrick Crichton Stuart, the 3rd Marquess of Bute, was one of the richest men in the British Empire in the late 19th century. With an annual income in excess of £150,000 - around £15 million in contemporary currency - he pursued his passion for architecture with a vengeance. Narrated by Suzanne Packer, The Scot Who Spent a Welsh Fortune delves into the extraordinary world of Lord Bute and reveals what connects the small Scottish island of Bute to modern Cardiff.

Bute was one of the most unconventional mavericks of the Victorian age, passionate about the past but also far ahead of his time - a blue-blooded aristocrat, who supported women's rights and striking miners, a Welsh-speaking intellectual Catholic who was also a ghost hunter. Above all, Bute was a fabulously rich and visionary creator of great architecture including the Gothic fantasy of Cardiff Castle, and Castell Coch - the fairy-tale castle.

The 3rd Marquess got his hands on his fortune at the age of 21, but already when he was 18, he met the outrageous and eccentric Gothic designer William Burges. It was the start of a lifetime's collaboration with artists and architects which would pour Bute's original mind into fabulous buildings in an astonishing variety of styles.

William Burges transformed Bute's medieval Cardiff Castle into a Welsh Camelot. Within fantasy towers, he created lavish interiors, rich with murals, stained glass, marble, gilding and elaborate wood carvings. Then Bute gave Burges the dream commission - to restore the 14th-century Welsh ruins of Castell Coch near Cardiff as a summer party house for the family. He recreated, from a heap of rubble, a fairy-tale castle. The interiors were elaborately decorated, with specially designed furniture. It even had its own vineyard - the first in Britain.

Bute's next target was the family ancestral seat Mount Stuart on the Isle of Bute, where he was born. When it was destroyed in a fire, Bute embarked on a huge new Gothic palace, driven by his own taste and design skills.

The footprint of the Bute family still looms large in Cardiff. The Bute obsession with Gothic style entered the architectural DNA of Cardiff's domestic buildings. The green lung at the city's heart - Bute Park - was the family's back garden, and Cathays Park, one of the finest civic centres in Britain, was sold to the city by Lord Bute on condition it would be used for cultural, civic and educational purposes. The Bute family names are everywhere - Bute Street, Mount Stuart Square, after the family estate in Scotland, and the now demolished Ninian Park Football Ground, after the 3rd Marquess's second son, who became MP for Cardiff and died in the First World War.

Bute died in 1900 aged only 53 after a protracted illness and was buried in a small atmospheric mausoleum in the family graveyard on the shores of the Isle of Bute. His heart was buried on the Mount of Olives in Jerusalem. But his greatest memorials are his Welsh and Scottish grand designs.

**THU 00:00 Top of the Pops (m0008zc3)**

[Repeat of broadcast at 19:30 today]

**THU 00:30 B is for Book (b07jzb7)**

Documentary following a group of primary schoolchildren over the course of a year as they learn to read. Some of them make a flying start, but others struggle even with the alphabet. The film takes us into their home lives, where we find that some parents are strongly aspirational, tutoring children late into the night, while others speak English as a foreign language, if at all.

As the children master the basics, they discover the magical world of stories and look with fresh eyes at the world around them. The film gives us privileged access to a profound process that all of us only ever do once in our lives.

**THU 01:30 Spiral (b09qrc3w)**

Series 6

Episode 11

Drissa Camara is double-crossed, but hopes his hold over Gilou

will save him. The secrets and lies become too much for Tintin. Josephine is in jeopardy if she sticks to her story.

In French with English subtitles.

**THU 02:30 Spiral (b09qrc3z)**

Series 6

Episode 12

A blunder by the depleted detective team has a shocking outcome, while what Moldovan also sells is revealed. Will Edelman's bluntness sway Josephine? Roban runs out of options.

In French with English subtitles.

**FRIDAY 04 OCTOBER 2019****FRI 19:00 World News Today (m0008zbq)**

The latest news, exploring the day's events from a global perspective.

**FRI 19:30 The Live Lounge Show (m0008zbs)**

Series 3

With Taylor Swift

Clara Amfo takes us behind the scenes of the world-famous Radio 1 Live Lounge - showcasing the biggest names in music. In this episode Taylor Swift, YUNGBLUD and Mahalia all feature.

**FRI 20:00 50s Britannia (b01sgbw2)**

Rock 'n' Roll Britannia

Long before the Beatles there was British rock 'n' roll. Between 1956 and 1960 British youth created a unique copy of a distant and scarce American original whilst most parents, professional jazz men and even the BBC did their level best to snuff it out.

From its first faltering steps as a facsimile of Bill Haley's swing style to the sophistication of self-penned landmarks such as Shakin' All Over and The Sound of Fury, this is the story of how the likes of Lord Rockingham's XI, Vince Taylor and Cliff Richard and The Shadows laid the foundations for an enduring 50-year culture of rock 'n' roll.

Now well into their seventies, the flame still burns strong in the hearts of the original young ones. Featuring Sir Cliff Richard, Marty Wilde, Joe Brown, Bruce Welch, Cherry Wainer and The Quarrymen.

**FRI 21:00 Top of the Pops (m0008zbx)**

Gary Davies and Nicky Campbell present the pop chart programme, first broadcast on 28 July 1988. Featuring Pat Benatar, Shakin' Stevens and Glenn Medeiros.

**FRI 21:30 A Musical History (b0bss4sq)**

Stevie Wonder: A Musical History

Well-known fans celebrate Stevie Wonder and his music by selecting some of his best-loved songs. Wonder is one of the dominant figures in American music, a multi-faceted genius whose music has permeated popular culture, and he is not short of celebrity fans. His musical achievements are lauded in this anthology of his greatest hits.

Contributors include actor Martin Freeman, singers Alexander O'Neal, James Morrison, Beverley Knight and Corinne Bailey Rae, New Order's Gillian Gilbert and Stephen Morris, DJs Ana Matronic, Trevor Nelson and Norman Jay, Heaven's 17's Glenn Gregory and Martyn Ware, journalist Sian Pattenden and presenter Emma Dabiri.

**FRI 22:30 Betty Davis: Godmother of Funk (m0008zbb)**

Funk Queen Betty Davis changed the landscape for female artists in America. She 'was the first', as former husband Miles Davis said. 'Madonna before Madonna, Prince before Prince'.

An aspiring songwriter from a small steel town, Betty arrived on the 70s scene to break boundaries for women with her daring personality, iconic fashion and outrageous funk music. She befriended Jimi Hendrix and Sly Stone, wrote songs for the Chambers Brothers and the Commodores, and married Miles - startlingly turning him from jazz to funk on the album she named 'Bitches Brew'. She then, despite being banned and boycotted, went on to become the first black woman to perform, write and manage herself.

Betty was a feminist pioneer, inspiring and intimidating in a

manner like no woman before. Then suddenly - she just vanished. Betty Mabry Davis is a global icon whose mysterious life story has until now, never been told. Creatively blending documentary and animation, this movie traces the path of Betty's life, how she grew from humble upbringings to become a fully self-realized black female pioneer the world failed to understand or appreciate, revealing the mystery of her 35-year disappearance and her battle with mental illness and poverty. After years of trying, the elusive Betty finally allowed the filmmakers to creatively tell her story based on their conversations.

**FRI 23:25 The Story of Funk: One Nation Under a Groove (b046nm5)**

In the 1970s, America was one nation under a groove as an irresistible new style of music took hold of the country - funk. The music burst out of the black community at a time of self-discovery, struggle and social change. Funk reflected all of that. It has produced some of the most famous, eccentric and best-loved acts in the world - James Brown, Sly & the Family Stone, George Clinton's Funkadelic and Parliament, Kool & the Gang and Earth, Wind & Fire.

During the 1970s this fun, futuristic and freaky music changed the streets of America with its outrageous fashion, space-age vision and streetwise slang. But more than that, funk was a celebration of being black, providing a platform for a new philosophy, belief system and lifestyle that was able to unite young black Americans into taking pride in who they were.

Today, like blues and jazz, it is looked on as one of the great American musical cultures, its rhythms and hooks reverberating throughout popular music. Without it hip-hop wouldn't have happened. Dance music would have no groove. This documentary tells that story, exploring the music and artists who created a positive soundtrack at a negative time for African-Americans.

Includes interviews with George Clinton, Sly & the Family Stone, Earth, Wind & Fire, Kool & the Gang, War, Cameo, Ray Parker Jr and trombonist Fred Wesley.

**FRI 00:25 50s Britannia (b01sgbw2)**

[Repeat of broadcast at 20:00 today]

**FRI 01:25 Top of the Pops (m0008zbx)**

[Repeat of broadcast at 21:00 today]

**FRI 01:55 Hot Chocolate at the BBC (b06dl1c5)**

Errol Brown, who died aged 71 in May 2015, was probably the most famous and ubiquitous black British pop star of the 70s and early 80s. He co-founded Hot Chocolate with Tony Wilson in 1970 and the band went on to have a hit every year between 1971 and 1984.

This compilation of BBC performances and rare interview extracts celebrates Errol and Hot Chocolate, showcasing their Top 10 hits alongside rarely seen early performances and cult fan favourites.

We journey through over 15 years of chart smashes showcasing all the infectious numbers - Every 1's a Winner, Emma, So You Win Again and It Started With a Kiss - and of course, The Full Monty scene-stealer You Sexy Thing, a song that was in the charts in the 70s, 80s and 90s.

There are reminders of just how many Top 10 moments they had, with Girl Crazy and No Doubt About It, the hit that got away - Mindless Boogie - and their first appearance on BBC television with Love Is Life. Hot Chocolate were that rarity, a 70s British pop band who largely wrote their own tunes and arrangements and a mixed race band who perhaps inadvertently helped foster an early sense of British multi-culturalism. In Errol, they had a frontman who was not only a great singer, songwriter and frontman, but also resolutely and undemonstratively always himself, at ease in his own skin.

**FRI 02:55 A Musical History (b0bss4sq)**

[Repeat of broadcast at 21:30 today]