

**SATURDAY 05 DECEMBER 2015**

**SAT 19:00 Empire of the Seas: How the Navy Forged the Modern World (b00qbwq)**  
Series 1

The Golden Ocean

Historian and sailor Dan Snow presents the second episode in this four-part series examining the remarkable story of how the country's greatest institution - her navy - has shaped her history. In The Golden Ocean, Snow charts the period from 1690 to 1759 and reveals how England - soon to be Britain - and her navy rose from the depths of military and economic disaster to achieve global supremacy.

In 1690, France ruled the waves and the Royal Navy was in tatters. King William III had taken England into a disastrous war against the most powerful country in Europe. If England was to survive, it needed a new navy, one capable of carrying the fight to its enemies anywhere in the world.

To achieve this would require a national effort unlike anything that had been seen before. King William III's determination to achieve mastery of the seas unleashed a chain reaction of revolutions in finance, industry and agriculture which reshaped the landscape and created the country's first great credit boom. Fifty years before the Industrial Revolution, the Royal Navy became the engine of global change, propelling Britain into the modern world.

It had the desired effect at sea. By 1759, French forces around the world were capitulating to Britain's superior Navy. For the first time in her history, Britannia really did rule the waves.

**SAT 20:00 Britain's Outlaws: Highwaymen, Pirates and Rogues (b06qskdx)**  
Pirates

Few figures in British history have captured the popular imagination as much as the outlaw. From gentleman highwaymen, via swashbuckling pirates to elusive urban thieves and rogues, the brazen escapades and the flamboyance of the outlaw made them the antihero of their time - feared by the rich, admired by the poor and celebrated by writers and artists.

In this three-part series, historian Dr Sam Willis travels the open roads, the high seas and urban alleyways to explore Britain's 17th- and 18th-century underworld of highwaymen, pirates and rogues, bringing the great age of the British outlaw vividly to life.

Sam shows that, far from being 'outsiders', outlaws were very much a product of their time, shaped by powerful national events. In each episode, he focuses not just on a particular type of outlaw, but a particular era - the series as a whole offers a chronological portrait of the changing face of crime in the 17th and 18th centuries.

Sam takes to the high seas in search of the swashbuckling pirates of the golden age of piracy during the early 18th century. Following in the wake of the infamous Captain Kidd, Blackbeard, Calico Jack and others, Sam charts the devastating impact these pirates had during an era of colonial expansion and how, by plundering the vast network of seaborne trade, they became the most-wanted outlaws in the world.

**SAT 21:00 The Bridge (b06kbszc)**  
Series 3

Episode 5

Saga and Henrik interview the estranged sister of the latest victim, who mentions that he had been cautioned after complaints from some of his pupils. Whilst nursing the hospitalised Hans, Lillian discovers a wound inside his cheek and Saga immediately orders the re-examination of previous victims. Claus attends the gallery opening of works from Freddie Holst's private collection and is alarmed when Anneka arrives and demands admittance.

In Swedish and danish with English subtitles.

**SAT 22:00 The Bridge (b06k8014)**  
Series 3

Episode 6

A sceptical Henrik and Saga are initially unimpressed when a young art curator suggests a connection between the murders of Helle Anker and Lars-Ove Abrahamsson and the brutal attack on Hans, but his theory leads them to interview Freddie Holst, a successful businessman with a substantial art collection. The detectives are called to yet another victim whose mutilation seems to be the work of their serial killer.

In Swedish and Danish with English subtitles.

**SAT 23:00 Catching History's Criminals: The Forensics Story (p0214q38)**  
Instruments of Murder

Sherlock has his mind palace, Morse his music - every detective has an edge. For most, it's forensic science. This three-part series provides a rare and fascinating insight into the secret history of catching murderers, charting two centuries of the breakthroughs that have changed the course of justice. Surgeon and writer Gabriel Weston explores this rich history through some of the most absorbing, and often gruesome, stories in the forensic casebook - and looks ahead to how forensics will continue to solve the murders of the future.

Where there's a murder there's usually a weapon. It's a key piece of evidence that can hold all the clues needed to catch the killer and shine a light into the mind of the murderer. In this final episode, Gabriel investigates the forensic advances that have elevated the murder weapon from its role of mere evidence to that of key witness.

Arsenic, the undetectable weapon of choice in the 19th century, was exposed as the murder weapon with one simple chemical test, and distinctive marks left on a victim's skull led detectives to the murder weapon and the killer.

Gabriel also looks to the future and the latest advances in forensics. Scientists have developed 3D laser scanning that can be used to reconstruct the exact sequence of events at the scene of a gun crime and decipher whether a shooting was murder or self-defence. Gabriel also investigates the pioneering chemistry that can now determine where in the world someone has spent time based on just a few strands of their hair.

**SAT 00:00 I'm Not In Love: The Story of 10cc (b06r14pr)**

In celebration of the 40th anniversary of smash hit I'm Not in Love, the original members of 10cc - Graham Gouldman, Eric Stewart, Kevin Godley and Lol Creme - reunite to tell their story. The documentary shares the secrets to some of their most successful records, from the writing and the recording to the tours and the tensions.

With contributions from an impressive array of music industry legends including 10cc's band manager Harvey Lisberg, lyricist Sir Tim Rice, broadcaster Paul Gambaccini, legendary producer Trevor Horn, Stewart Copeland (The Police), Graham Nash (The Hollies) and Dan Gillespie Sells (The Feeling), not only does this film highlight the diversity of these four brilliant musicians' songwriting talent, but it also delves into the influence they had, as well as the politics beneath their acrimonious split in 1976, at the height of their fame.

**SAT 01:00 Top of the Pops (b06qy915)**

Richard Skinner presents the pop show, with performances from Adam and the Ants, Madness, the Stray Cats, Status Quo, Queen, ABBA and the Police. Guests include Gary Numan, and there's a dance performance from Legs & Co.

**SAT 01:40 The Old Grey Whistle Test (b014vzy3)**

70s Gold

The Old Grey Whistle Test was launched on 21 September 1971 from a tiny studio tucked behind a lift shaft on the fourth floor of BBC Television Centre. From humble beginnings, it has gone on to provide some of the best and most treasured music archive that the BBC has to offer.

This programme takes us on a journey and celebrates the musically mixed-up decade that was the 1970s, and which is reflected in the OGWTT archive. There are classic performances from the glam era by Elton John and David Bowie, an early UK TV appearance from Curtis Mayfield, the beginnings of heavy metal with Steppenwolf's iconic Born to Be Wild anthem and the early punk machinations of the 'mock rock' New York Dolls. Archive from the pinnacle year, 1973, features Roxy Music, The Wailers and Vinegar Joe. The programme's finale celebrates the advent of punk and new wave with unforgettable performances from Patti Smith, Blondie, Iggy Pop and The Jam.

Artists featured are Elton John, Lindisfarne, David Bowie, Curtis Mayfield, Gladys Knight & The Pips, Steppenwolf, Vinegar Joe, Brinsley Schwarz, New York Dolls, Argent, Bob Marley & The Wailers, Captain Beefheart, Johnny Winter, Dr Feelgood, Gil Scott Heron, Patti Smith, Tom Petty & The Heartbreakers, Cher & Gregg Allman, Talking Heads, The Jam, Blondie, Iggy Pop and The Specials.

**SAT 03:10 The Good Old Days (b06rcppr)**

Leonard Sachs chairs the old-time music hall programme, originally broadcast from Leeds in 1976. Guests include Les Dawson, Peggy Mount, Larry Parker, Jeannie Harris, Chantal &

Dumont, Albert Aldred and members of the Player's Theatre London. Also includes a performance from the Jan Madd Magic Show.

**SUNDAY 06 DECEMBER 2015**

**SUN 19:00 Concerto at the BBC Proms (b0112t55)**  
Rachmaninov Piano

Another chance to hear a live performance from the 2008 BBC Proms at the Royal Albert Hall of Rachmaninov's Piano Concerto No 4 - a composition with a distinctive jazzy quality and a theme in the second movement partially based on the nursery rhyme Three Blind Mice. Russian virtuoso pianist Boris Berezovsky performs with the National Youth Orchestra of Great Britain under the baton of conductor Antonio Pappano.

**SUN 19:25 Pina: Legend of Dance (b06ryjfl)**

In early 2009, director Wim Wenders began filming the work of renowned German choreographer Pina Bausch, and her dance company the Tanztheater Wuppertal. Unexpectedly, two days prior to rehearsals, Pina died. As the dance world mourned the loss of one of its great pioneers, Wenders cancelled the film, convinced it should not be pursued without her. However, following a period of reflection and with the support of her family and colleagues, Wenders decided to revive the film - the award-winning Pina: Legend of Dance is his dedication to her.

Featuring dancing from some of her most innovative choreography, including Café Müller, Le Sacre du Printemps, Vollmond and Kontakthof, the film interweaves archive footage of Pina herself at work, and follows the dancers on to the streets of Wuppertal, the spiritual home of her creativity.

**SUN 21:00 The Golden Age of Steam Railways (b01p8w38)**  
Small Is Beautiful

Two-part documentary telling the remarkable story of a band of visionaries who rescued some of the little narrow gauge railways that once served Britain's industries. These small railways and the steam engines that ran on them were once the driving force of Britain's mines, quarries, factories and docks. Then, as they disappeared after 1945, volunteers set to work to bring the lines and the steam engines back to life and started a movement which spread throughout the world. Their home movies tell the story of how they helped millions reconnect with a past they thought had gone forever.

**SUN 22:00 Easy Money (b01j8dgs)**

When business school student JW becomes a drug runner in order to maintain his double life, his fate becomes tied to two other men - Jorge, a fugitive on the run from both the Serbian mafia and the police, and mafia enforcer Mrado, who is on the hunt for Jorge.

In Swedish with English subtitles.

**SUN 00:00 Natural World (b01k784h)**  
2011-2012

The Unnatural History of London

Seals, parakeets and even pelicans that eat pigeons have all made London their home. That's as well as badgers, foxes, scorpions, and pigeons that ride the tube. But even more wonderful are the people who love the exotic wildlife of our capital, from Billingsgate fish porters and Indian chefs to 'Crayfish Bob', who scours London's canals for Turkish invaders. This is a warm-hearted portrait of the world's greenest capital city and the Londoners who love its secret wildlife.

**SUN 01:00 Britain's Deadliest Rail Disaster: Quintinshill (b05vqx7v)**

On 22 May 1915, a collision at the Quintinshill signal box, near Gretna, became Britain's deadliest ever rail crash. Involving a military train filled with troops - most of whom were from Leith - heading for Gallipoli and two passenger trains, the crash claimed an estimated 226 lives and left hundreds more injured.

The duty signalmen, George Meakin and James Tinsley, were found responsible for the disaster and were both jailed on the charges of culpable homicide.

Neil Oliver explores the series of mistakes that may have caused the collision, the part played by the train companies and the government, and determines whether the investigation would have come to the same conclusions if it were carried out today. Dramatised reconstructions add to this compelling account of a tragedy which had a profound effect on several communities in Scotland, and remains the deadliest in the annals of Britain's railways.

Britain's Deadliest Rail Disaster: Quintinshill is a Finestripe Productions programme for BBC Scotland.

**SUN 02:00 Horizon (b0094cym)**  
2007-2008

Are We Alone in the Universe?

For 50 years, the Search for Extra Terrestrial Intelligence (SETI) has been scanning the galaxy for a message from an alien civilisation. So far to no avail, but a recent breakthrough suggests they may one day succeed. Horizon joins the planet hunters who have discovered a new world called Gliese 581c, which may have habitats capable of supporting life.

NASA hopes to find 50 more Earth-like planets by the end of the decade, all of which dramatically increases the chance that alien life has begun elsewhere in the galaxy.

**SUN 02:50 Natural World (b00h37zc)**  
2008-2009

Bears on Top of the World

This moving film reveals the differing fortunes of a mother polar bear, a mother grizzly bear and their newborn cubs, in a rapidly changing world. The shrinking Arctic ice may be making life much tougher for polar bears, but it is offering new opportunities for grizzly bears to the south.

Where once the lives of white and brown bears could not have been more different, in summertime they now meet along shores and islands almost all the way to the North Pole. Amazingly, they have even interbred. This is a remarkable story of how bears, ever intelligent and resourceful, are adapting to a warming world.

#### MONDAY 07 DECEMBER 2015

**MON 19:00 World News Today (b06rfggm)**

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

**MON 19:30 Railway Walks with Julia Bradbury (b00f80z6)**  
Harbouring History

The backstreets of Weymouth seem an unlikely spot to explore railway history, but Julia discovers there was once a short railway that ran south from Weymouth and across the unique coastal features of Chesil Beach and Portland. The walk is the ideal platform for learning about the history of Portland Harbour and the tied isle's most famous export, Portland stone.

**MON 20:00 Railway Walks with Julia Bradbury (b00fd1dd)**  
Gateway to the Highlands

Julia Bradbury faces an epic walk in more ways than one. Not only is this the longest and arguably most dramatic walk yet, but it passes through the unruly territory of Scottish clans and Rob Roy. The Highlands were a place to be wary of, until the railway arrived.

**MON 20:30 The Quizeum (b06rf144)**  
Series 2

Episode 6

The Quizeum visits the Royal Armouries in Leeds, home to the national collection of arms and armour. From medieval knights to the modern-day soldier, and the Wild West to the Ottoman Empire, this extraordinary museum houses a world-renowned collection of some 75,000 objects. Being quizzed by Griff Rhys Jones are medieval historian Dr Janina Ramirez, historians professor Kate Williams and Simon Thurley, and legendary explorer Benedict Allan.

**MON 21:00 Britain's Outlaws: Highwaymen, Pirates and Rogues (b06rf146)**  
Rogues Gallery

Few figures in British history have captured the popular imagination as much as the outlaw. From gentleman highwaymen, via swashbuckling pirates to elusive urban thieves and rogues, the brazen escapades and the flamboyance of the outlaw made them the anti-hero of their time - feared by the rich, admired by the poor and celebrated by writers and artists.

In this three-part series, historian Dr Sam Willis travels the open roads, the high seas and urban alleyways to explore Britain's 17th and 18th-century underworld of highwaymen, pirates and rogues, bringing the great age of the British outlaw

vividly to life.

Sam shows that, far from being 'outsiders', outlaws were very much a product of their time, shaped by powerful national events. In each episode, he focuses not just on a particular type of outlaw, but a particular era. The series as a whole offers a chronological portrait of the changing face of crime in the 17th and 18th centuries.

In the final episode, Sam looks at urban crime, fraud and corruption in the 18th century, uncovering a fascinating rogues' gallery of charmers, fraudsters and villains. Charmer like thief and serial escaper Jack Sheppard, so notorious that almost a quarter of a million people turned up to witness his hanging. Almost as controversial in her lifetime was Mary Toft, a fraudster who managed to convince no less than King George I and his surgeon that she had given birth to rabbits, making her, perhaps, the original 'con' artist.

**MON 22:00 Storyville (b06s0g85)**  
The Six-Day War: Censored Voices

Documentary about a long-withheld piece of oral history - a series of tape-recorded interviews conducted with returning Israeli soldiers after Israel's land gains in the Six-Day War of 1967. Led by the author Amos Oz, a group of kibbutzniks joined together in intimate, taped conversations directly after returning from battlefield.

At the time only a few of these recordings were permitted to gain a public hearing by the Israeli government, but this film reveals them to the public for the first time. The uncensored testimonies suggest that the soldiers were not euphoric about the outcome, but instead were profoundly depressed about what the victory cost.

In this brilliantly-conceived documentary, director Mor Loushy takes the old testimonies recorded by the Israeli soldiers in the immediate aftermath of the war, and plays the recordings back to the now-aged veterans and observes their responses.

**MON 23:20 Tails You Win: The Science of Chance (p00yh2rc)**

Smart and witty, jam-packed with augmented-reality graphics and fascinating history, this film, presented by professor David Spiegelhalter, tries to pin down what chance is and how it works in the real world. For once this really is 'risky' television.

The film follows in the footsteps of The Joy of Stats, which won the prestigious Grierson Award for Best Science/Natural History programme of 2011. Now the same blend of wit and wisdom, animation, graphics and gleeful nerdery is applied to the joys of chance and the mysteries of probability, the vital branch of mathematics that gives us a handle on what might happen in the future. Professor Spiegelhalter is ideally suited to that task, being Winton professor for the public understanding of risk at Cambridge University, as well as being a recent Winter Wipeout contestant on BBC TV.

How can you maximise your chances of living till you're 100? Why do many of us experience so many spooky coincidences? Should I take an umbrella? These are just some of the everyday questions the film tackles as it moves between Cambridge, Las Vegas, San Francisco and... Reading.

Yet the film isn't shy of some rather loftier questions. After all, our lives are pulled about and pushed around by the mysterious workings of chance, fate, luck, call it what you will. But what actually is chance? Is it something fundamental to the fabric of the universe? Or rather, as the French 18th century scientist Pierre Laplace put it, 'merely a measure of our ignorance'.

Along the way Spiegelhalter is thrilled to discover One Million Random Digits, probably the most boring book in the world, but one full of hidden patterns and shapes. He introduces us to the cheery little unit called the micromort (a one-in-a-million chance of dying), taking the rational decision to go sky-diving because doing so only increases his risk of dying this year from 7000 to 7007 micromorts. And in one sequence he uses the latest infographics to demonstrate how life expectancy has increased in his lifetime and how it is affected by our lifestyle choices - drinking, obesity, smoking and exercise.

Did you know that by running regularly for half an hour a day you can expect to extend your life by half an hour a day? So all very well... if you like running.

Ultimately, Tails You Win: The Science of Chance tells the story of how we discovered how chance works, and even to work out the odds for the future; how we tried - but so often failed - to conquer it; and how we may finally be learning to love it, increasingly setting uncertainty itself to work to help crack some of science's more intractable problems.

Other contributors include former England cricketer Ed Smith, whose career was cut down in its prime through a freak, unlucky accident; Las Vegas gambling legend Mike

Shackleford, the self-styled 'Wizard of Odds'; and chief economist of the Bank of England, Spencer Dale.

**MON 00:20 Empire of the Seas: How the Navy Forged the Modern World (b00qbvqw)**  
[Repeat of broadcast at 19:00 on Saturday]

**MON 01:20 Patagonia with Huw Edwards (b05xd52f)**

Huw Edwards fulfils a lifelong dream to explore Patagonia, and the unique attempt to preserve Welsh culture by isolating a Welsh community in one of the most remote and inhospitable places on earth. A hundred and fifty years after the pioneers arrived, Huw meets their descendants and asks what remains of the culture the forefathers wanted to safeguard.

**MON 02:20 The Quizeum (b06rf144)**  
[Repeat of broadcast at 20:30 today]

**MON 02:50 Britain's Outlaws: Highwaymen, Pirates and Rogues (b06rf146)**  
[Repeat of broadcast at 21:00 today]

#### TUESDAY 08 DECEMBER 2015

**TUE 19:00 World News Today (b06rfggm)**

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

**TUE 19:30 The Boats That Built Britain (b00s96rt)**  
The Matthew

No ship has ever made a more important discovery than the Matthew. In 1497, explorer John Cabot left Bristol on this little boat and 3,000 miles later landed in what we now know is North America. His discovery would change Britain and the world forever.

Sailor and writer Tom Cunliffe sails the Matthew for himself and finds out just how this incredible little boat made a journey into the unknown and came back to tell the story.

**TUE 20:00 The Fisherman's Apprentice with Monty Halls (b01dwj66)**  
Episode 4

Marine biologist Monty Halls continues to explore the challenges facing the British fishing industry by living and working as a traditional Cornish fisherman.

This time he heads out into the Atlantic, on a 90ft deep-sea trawler. For eight days and nights, working round the clock, Monty discovers what impact these boats are having on the marine environment.

**TUE 21:00 Blood and Gold: The Making of Spain with Simon Sebag Montefiore (b06rvgp7)**  
Conquest

In the first episode, Simon explores Spain's early years, its emergence as the battleground of empires and its golden age under the Cordoba Caliphate.

**TUE 22:00 Dan Cruickshank's Warsaw: Resurrecting History (b06r12fd)**

Dan Cruickshank returns to his childhood home of Warsaw for the first time in almost 60 years. In a personal and moving film, he recalls his boyhood memories to explore the memories of the city and the memories of its people. No city in Europe suffered so much destruction in the Second World War, no city rose up so heroically from the ashes. The Nazis had razed Warsaw to the ground, but after the war the people fought hard to bring their city back from the dead in one of the greatest reconstruction jobs in history. As a boy, Cruickshank lived in the rebuilt old town and it inspired his love of architecture and made him the man he is today.

**TUE 23:00 Building Burma's Death Railway: Moving Half the Mountain (b03z09n9)**

The brutal use of British prisoners of war by the Japanese to build a railway linking Thailand to Burma in 1943 was one of the worst atrocities of the Second World War. For the first time in 70 years, British POWs and their Japanese captors, many now in their nineties, open their hearts to tell the story of what really happened on the 'Death Railway'. Alongside the extraordinary experiences and stories of survival told by the British, their Japanese guards tell of different horrors of war, some never disclosed before.

Exploring how they have survived the terrible memories, this is an often inspiring story that many of these men have waited a long time to tell. What emerges is a warm and emotional journey through the lives of men from different sides reflecting on a terrible event that still haunts them.

**TUE 00:00 Britain's Outlaws: Highwaymen, Pirates and Rogues (b06rf146)**

[Repeat of broadcast at 21:00 on Monday]

**TUE 01:00 Timewatch (b00785y5)**  
2008-2009

The Real Bonnie and Clyde

Hollywood portrayed them as the most glamorous outlaws in American history, but the reality of life on the run for Bonnie and Clyde was one of violence, hardship and danger.

With unprecedented access to gang members' memoirs, family archives and recently released police records, Timewatch takes an epic road trip through the heart of Depression-era America, in search of the true story of Bonnie and Clyde.

**TUE 02:00 The Fisherman's Apprentice with Monty Halls (b01dwj66)**

[Repeat of broadcast at 20:00 today]

**TUE 03:00 Blood and Gold: The Making of Spain with Simon Sebag Montefiore (b06rvgp7)**

[Repeat of broadcast at 21:00 today]

**WEDNESDAY 09 DECEMBER 2015**

**WED 19:00 World News Today (b06rfgyy)**

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

**WED 19:30 The Boats That Built Britain (b00sbp0t)**

The Pickle

HMS Pickle is the unsung hero of the British navy. In 1805 Britain had just won the most significant sea battle in history, Trafalgar. But how to get the message home to an expectant nation? Enter the Pickle, the smallest ship in the fleet, a little boat with a revolutionary new design that beat her bigger rivals back to Britain to deliver the news. Sailor and writer Tom Cunliffe sets out in the Pickle and tells the story of a boat that, against all the odds, delivered the most important news in Britain's maritime history.

**WED 20:00 A Timewatch Guide (b051h0gy)**

Series 1

The Mary Rose

Historian Dan Snow explores the greatest maritime archaeology project in British history - the Mary Rose. Using 40 years of BBC archive footage Dan charts how the Mary Rose was discovered, excavated and eventually raised, and what the latest research has revealed about this iconic ship and her crew. Dan also investigates how the Mary Rose project helped create modern underwater archaeology, examining the techniques, challenges and triumphs of the divers and archaeologists involved.

**WED 21:00 Quartet (b03ftm2k)**

An opera star arrives at a performers' retirement home amidst fraught preparations for a fundraising concert. Her presence adds to the tension, but it also offers an opportunity to reunite a successful quartet. The diva's one-time husband is upset to see her, while the two other former members relish the challenge.

**WED 22:30 What a Performance! Pioneers of Popular Entertainment (b06r7xz4)**

Music Hall

Comedian Frank Skinner and music presenter Suzy Klein step out in the first part of this highly entertaining and thought-provoking three-part series which explores a century of popular entertainment from the Victorian age of the music hall, through the golden age of 20th-century variety to the working men's clubs of the 1950s.

The first episode looks at the birth of 19th-century music hall, the colourful and sometimes dangerous world of its entertainers and the audiences whose lives were changed by what was Britain's first mass entertainment industry. Together, Suzy and Frank get under the skin of some of its greatest stars - some of

whom, like Marie Lloyd and Champagne Charlie, are household names to this day, while the eccentric Victorian comic Dan Leno, later copied by Charlie Chaplin and Stan Laurel, have fallen into obscurity.

Not only do Frank and Suzy dig into the history of these stars and the world from which they emerged, but they also study their acts and try their hand at performing them at the end of the show.

**WED 23:30 A Timewatch Guide (b051h0gy)**

[Repeat of broadcast at 20:00 today]

**WED 00:30 The Golden Age of Steam Railways (b01p8w38)**

[Repeat of broadcast at 21:00 on Sunday]

**WED 01:30 Building Burma's Death Railway: Moving Half the Mountain (b03z09n9)**

[Repeat of broadcast at 23:00 on Tuesday]

**WED 02:30 Botany: A Blooming History (b011wz4q)**

Photosynthesis

The air we breathe, and all the food we eat, is created from water, sunlight, carbon dioxide and a few minerals. That's it, nothing else. It sounds simple, but this process is one of the most fascinating and complicated in all of science. Without it there could be no life on earth. It's that important.

For centuries people believed that plants grew by eating soil. In the 17th century, pioneer botanists began to make the connection between the growth of a plant and the energy from the sun. They discovered how plants use water, sunlight and carbon dioxide to produce sugars - how, in fact, a plant grows.

The process of photosynthesis is still at the heart of scientific research today. Universities across the world are working hard to replicate in the lab what plants do with ruthless efficiency. Their goal is to produce a clean, limitless fuel and if they get it right it will change all our lives.

**THURSDAY 10 DECEMBER 2015**

**THU 19:00 World News Today (b06rfgh3)**

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

**THU 19:30 Top of the Pops (b06rhpc2)**

Simon Bates presents the weekly pop show. Includes performances from the Beat, St Winifred's School Choir, the Specials, Gary Numan, Robert Palmer, the Nolans and Jona Lewie, and a dance routine by Legs & Co.

**THU 20:00 Life of a Mountain (b04y4gd7)**

A Year on Scafell Pike

A beautifully cinematic documentary following a year in the life of England's highest mountain, Scafell Pike, through the eyes of the farmers who work the valleys and fells, those who climb the mountain for pleasure and those who try to protect its slopes.

Filmed over a twelve-month period, it follows the seasons on the mountain from spring lambs through to winter snows. The contributions of the British Mountaineering Council and National Trust volunteers make clear the crucial importance of maintaining the landscape quality of England's highest peak for future generations.

**THU 21:00 What a Performance! Pioneers of Popular Entertainment (b06rhpc7)**

The Rise of Variety

In the second episode, Frank Skinner and Suzy Klein explore the golden age of variety theatre, from the start of the 20th century to the outbreak of the Second World War. They immerse themselves in the careers of megastars including George Formby and Gracie Fields, who both remain household names today. They also get to grips with some lesser-known artists, including La Loie Fuller, an innovative Chicago-born choreographer and dancer who took London by storm during the Edwardian era.

Two other stars of the pre-World War I era - the Scottish comedian and singer Sir Harry Lauder and the once hugely famous Vesta Tilley, a talented male impersonator - feature prominently as well, and Frank and Suzy attempt to recreate their acts, live on stage, at the end of the show.

**THU 22:00 Arena (b0074prh)**

Ken Dodd's Happiness

A tribute to Liverpudlian comic Ken Dodd, in which he discusses his career and the influences of his comedy style.

Features film clips of his early performances and footage of him on tour in more recent times.

**THU 23:00 Sex and the Sitcom (b00zwn0)**

How has the sitcom responded to the sexual revolution?

From Hancock's Half Hour in the 50s, through 70s sitcoms like Up Pompeii! and Reggie Perrin to contemporary comedies like Him & Her, this documentary explores sexual frustration as an enduring sitcom theme, the changing role of women and the British love of innuendo.

Why did Butterflies cause such a stir in the 80s? Did Men Behaving Badly really capture the sexual politics of the 90s? And how did the permissive society affect Terry and June?

The film looks at the changing language of sitcom, contrasts British comedy with its more liberal American counterpart, and asks whether the modern sitcom recognises any taboos at all.

Contributors include sitcom stars Leslie Phillips, Lesley Joseph, Wendy Craig, and writers David Nobbs, Simon Nye and Jonathan Harvey.

**THU 00:00 Top of the Pops (b06rhpc2)**

[Repeat of broadcast at 19:30 today]

**THU 00:40 Timeshift (b044yw1d)**

Series 14

Mods, Rockers and Bank Holiday Mayhem

A trip back to the days when 'style wars' were just that - violent confrontations about the clothes you wore. Spring 2014 marked the 50th anniversary of the bank holiday 'battles of the beaches', when hundreds of mods and rockers flocked to seaside resorts on scooters and motorbikes in search of thrills and spills.

Timeshift tells the story of how this led to violence, arrests and widespread concern about the state of British youth. But mods and rockers had more in common than was first obvious - they were the first generation of baby boomers to reach their teenage years at a time when greater prosperity and wider freedoms were transforming what it meant to be young.

**THU 01:40 Arena (b0074prh)**

[Repeat of broadcast at 22:00 today]

**THU 02:40 What a Performance! Pioneers of Popular Entertainment (b06rhpc7)**

[Repeat of broadcast at 21:00 today]

**FRIDAY 11 DECEMBER 2015**

**FRI 19:00 World News Today (b06rfgh8)**

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

**FRI 19:30 The Good Old Days (b06rhvbs)**

Leonard Sachs chairs the music hall programme, originally filmed in 1980 at the City Varieties Theatre, Leeds. Includes performances from the Player's Theatre Group, the King's Singers, Bernie Clifton, Sheila White and Frankie Vaughan. Also features a sketch from Jan Hunt and Doreen Hermitage.

**FRI 20:20 Pop Go the Sixties (b0088xv2)**

Series 1

Helen Shapiro

A colourful nugget of pop mined from the BBC's archive, as Helen Shapiro performs Walking Back to Happiness.

**FRI 20:25 Pop Go the Sixties (b008d00q)**

Series 1

Tony Bennett

A colourful nugget of pop mined from the BBC's archive.

**FRI 20:30 Sounds of the 70s 2 (b01jk1b8)**

Soul: Keep On Keeping On

Imported American soul was big news in the UK in the 1970s. Before the Brits developed their own brand of soul, American performers were here demonstrating how it was done and being appreciated by all and sundry. The series continues with classic performances from the kings and queens of soul, including Aretha Franklin, Billy Preston, The Tams, Curtis Mayfield, Bill Withers, The Stylistics, Gil Scott-Heron and The Jacksons.

**FRI 21:00 TOTP2 (b01cyxhs)**

Boybands

Showcasing the boy band, from its origins in 60s beat groups and R&B outfits to the new wave of 80s boy bands and beyond. Defined by their vocal harmonies, synchronised dance steps and groups of men, each with 'their own distinct appeal', this compilation celebrates the best of boy bands down the ages.

From JLS to The Four Tops, The Monkees to Westlife, and Village People to Blazin' Squad, relive your teenage years with the boys that mattered most.

**FRI 22:00 Rollermania: Britain's Biggest Boy Band (b06bbct4)**

In 1975, The Bay City Rollers were on the brink of global superstardom. The most successful chart act in the UK with a unique look and sound were about to become the biggest thing since the Beatles. Featuring interviews with Les McKeown and other members of the classic Bay City Roller line-up, and using previously unseen footage shot by members of the band and its entourage, this is the tale of five lads from Edinburgh who became the world's first international teen idols and turned the whole world tartan.

**FRI 23:00 Pop Life (b01cytgk)**

I'm in a Boy Band

An exploration of these musical band of brothers from the inside out. How do boy bands work and what is it like to be in one? And what is the secret of their popularity?

A star-packed, cross-generational cast - from pioneering Motown legends like the Four Tops and the Jackson 5 to 21st-century boys like One Direction and JLS - speak frankly about what it is really like to follow the boy band dream.

**FRI 00:00 TOTP2 (b01cyxhs)**

[Repeat of broadcast at 21:00 today]

**FRI 01:00 Rollermania: Britain's Biggest Boy Band (b06bbct4)**

[Repeat of broadcast at 22:00 today]

**FRI 02:00 Pop Life (b01cytgk)**

[Repeat of broadcast at 23:00 today]

**FRI 03:00 The Good Old Days (b06rhvbs)**

[Repeat of broadcast at 19:30 today]