

SATURDAY 14 JANUARY 2017

SAT 19:00 Timeshift (b00x7c3z)
Series 10

The Golden Age of Coach Travel

Documentary which takes a glorious journey back to the 1950s, when the coach was king. From its early origins in the charabanc, the coach had always been the people's form of transport. Cheaper and more flexible than the train, it allowed those who had travelled little further than their own villages and towns a first heady taste of exploration and freedom. It was a safe capsule on wheels from which to venture out into a wider world.

The distinctive livery of the different coach companies was part of a now-lost world, when whole communities crammed into coach after coach en route to pleasure spots like Blackpool, Margate and Torquay. With singsongs, toilet stops and the obligatory pub halt, it didn't matter how long it took to get there because the journey was all part of the adventure.

SAT 20:00 Inside Chernobyl's Mega Tomb (b08650s6)

Documentary which follows the construction of a trailblazing 36,000-tonne steel structure to entomb the ruins of the nuclear power plant destroyed in the 1986 Chernobyl disaster. It films close up with the team of international engineers as they race to build the new structure before Chernobyl's original concrete sarcophagus - the hastily built structure that covers the reactor - collapses.

Built to last just 30 years, the temporary sarcophagus is now crumbling, putting the world at risk of another release of radioactive dust. Radiation levels make it impossible for workers to build the new shelter directly over the old reactor, so engineers are erecting the new megastructure - taller than the tower of Big Ben and three times heavier than the Eiffel Tower - to one side and will then face the challenge of sliding the largest object ever moved on land into place over the old reactor.

SAT 21:00 Lost Kingdoms of Central America (b04j8st0)
The People Who Greeted Columbus

The Taino people of the Caribbean were the first people of the Americas to greet Christopher Columbus. But, as Dr Jago Cooper reveals, they had a multicultural society complete with drug-infused rituals, strange skulls and amazing navigation. In deep caverns and turquoise seas, Jago uncovers their hidden history.

SAT 22:00 The Young Montalbano (b06w215g)
Series 2

Room Number Two

There is much excitement at Vigata's police station, as Salvo and Livia start to prepare for their wedding. Deputy Inspector Mimi' Aiguellu is especially eager to be picked as Salvo's wedding witness, but Salvo may well have other plans.

Meanwhile, Montalbano is taking on some new cases. A fire at a local hotel which resulted in a man's death is suspected to have been caused by arson, while police receive an anonymous letter warning of the impending murder of a married woman at the hands of her jealous husband.

In Italian with English subtitles.

SAT 23:45 Top of the Pops (b0888q6x)

John Peel and David Jensen present the weekly look at the pop charts, first broadcast on 13 January 1983. Featuring Incantation, Men at Work, Sharon Redd, Keith Harris and Orville, The Belle Stars, John Williams, Eddy Grant, The Maisonnets, Phil Collins and Donna Summer.

SAT 00:20 Elvis Costello: Mystery Dance (b03gq719)

Elvis Costello is one of the uncontested geniuses of the rock world. 33 albums and dozens of hit songs have established him as one of the most versatile and intelligent songwriters and performers of his generation. This film provides a definitive account of one of Britain's greatest living songwriters - the first portrait of its kind - directed by Mark Kidel, who was won numerous awards for his music documentaries, including portraits of Rod Stewart, Boy George, Tricky, Alfred Brendel, Ravi Shankar, John Adams and Robert Wyatt.

Elvis is a master of melody, but what distinguishes him above all is an almost uncanny way with words, from the playful use of the well-worn cliché to daring poetic associations, whether he is writing about the sorrow of love or the burning fire of desire, the power play of the bedroom or the world of politics.

The film tells the story of Elvis Costello - a childhood under the influence of his father Ross McManus, the singer with Joe Loss's popular dance band; a Catholic education which has clearly marked him deeply; his overnight success with The Attractions and subsequent disenchantment with the formatted pressures of the music business; a disillusionment which led him to reinvent himself a number of times; and writing and recording songs in various styles, including country, jazz, soul and classical.

The film focuses in particular on his collaborations with Paul McCartney and Allen Toussaint, who both contribute. It also features exclusive access to unreleased demos of songs written by McCartney and Costello. Elvis was interviewed in Liverpool, London and New York, revisiting the places in which he grew up. The main interview, shot over two days at the famed Avatar Studios in NYC, is characterised by unusual intimacy. Elvis talks for the first time at great length about his career, songwriting and music, and often breaks into song with relevant examples from his repertoire.

SAT 01:20 Later Presents... Elvis Costello in Concert (b03h8qyt)

Jools Holland presents a live studio performance by singer-songwriter Elvis Costello, accompanied by the Attractions, the Brodsky Quartet and a chamber-jazz septet. The set features songs from throughout his career, including classics Pump It Up and Watching the Detectives.

SAT 02:20 Great Guitar Riffs at the BBC (b049mtyx)

Compilation of BBC performances featuring some of the best axe men and women in rock 'n' roll, from Hendrix to The Kinks, Cream to AC/DC, The Smiths to Rage Against the Machine and Radiohead to Foo Fighters. Whether it is The Shadows playing FBI on Crackerjack, Jeff Beck with The Yardbirds, The Jimi Hendrix Experience, Cream's Sunshine of Your Love from their final gig, Pixies on the Late Show, AC/DC on Top of the Pops or Fools Gold from The Stone Roses, this compilation is a celebration of rock 'n' roll guitar complete with riffs, fingerstylin', wah-wah pedals and Marshall amps.

SUNDAY 15 JANUARY 2017

SUN 19:00 David Starkey's Music and Monarchy (b037x4sh)
Revolutions

Dr David Starkey's exploration of how the monarchy shaped Britain's music reaches the 17th century, when religious conflict threatened not only the lives of musicians and monarchs, but the future of the monarchy and the glorious tradition of British music itself. And yet, in the midst of this upheaval, royalty presided over a series of musical breakthroughs - from the first chamber concerts and proto-operas, to the triumphant debut of the baroque orchestra.

Westminster Abbey choir sing some of the earliest surviving music to be heard at British coronations; the Band of the Life Guards play pieces which Charles I used in battle, which marched James II out of his kingdom, and which mourned Mary II; and the Academy of Ancient Music perform some of the glorious works of arguably the greatest English composer - Henry Purcell. Also featured are works by Orlando Gibbons, Thomas Tomkins and the little-known William Lawes - a composer who had the potential to be truly great, had he not died fighting for the king in the English Civil War.

David also visits the Whitehall Banqueting House, home of the extravagant form which was the forerunner of opera in England - the court masque. And he explores how music was fought over by Puritans and Royalists - with the church organ proving a surprisingly bitter source of conflict.

SUN 20:00 Sword, Musket & Machine Gun: Britain's Armed History (b0888mjv)
The Big Bang

Dr Sam Willis charts the impact of gunpowder on the battlefield, from cannons to the first handheld weapons.

His journey starts in the 13th century with Oxford scientist and monk Roger Bacon, believed to be the first Englishman to write down a recipe for gunpowder. Sam sees one of the largest surviving medieval cannons still in existence - Mons Meg in Edinburgh Castle. He examines a primitive 1400s 'handgonne' in the Tower of London Armouries that seems more like a mini cannon, with no trigger.

Sam tells the story of the Earl of Moray James Stewart who was regent of Scotland having ejected Mary Queen of Scots from the throne in 1570.

Sam next tells the story of the gunpowder plot. He includes

lesser-known details of the 1605 attempted attack. For example, Guy Fawkes was discovered not just once but twice. Also the amount of gunpowder is thought to have been far more than was required. Another strange side to gunpowder's story is revealed - the saltpetre men. Gunpowder requires three ingredients - charcoal, sulphur and saltpetre. In the 17th century chemistry was primitive. Saltpetre or potassium nitrate forms from animal urine and the saltpetre men would collect soil where animals had urinated. This meant they dug up dovecots, stables and even people's homes. They had sweeping powers to come onto people's property and take their soil. They abused these heavily and one of the grievances against King Charles I was the heavy handedness of the saltpetre men.

Eventually, the conflict with the king would turn into the English Civil War. A key weapon in this war was the musket. It was so basic blacksmiths could churn it out by the dozen. Sam fires one with the help of expert gunsmith Robert Tilney. He shows both the musket's power and the lack of accuracy. Muskets were inaccurate but the tactic used was to wait until opponents were very close and then fire one huge volley. Sam shows that the musket would then be used as a heavy club.

Gunpowder weapons gave different injuries to swords and arrows. This led to changes in battlefield surgery, and one who was a key influence was surgeon Richard Wiseman. Sam shows that Wiseman had learnt that any cloth or fragment left from a bullet wound could cause infection and kill the patient.

Finally, Sam travels to Saint Malo in France to tell the story of a frightening attack by the British. In 1693, France and Britain were at war and French pirates had been attacking English ships. Captain John Benbow was asked to launch an attack using a ship crammed with gunpowder. Benbow put 20,000 pounds of gunpowder into the ship as well as many other inflammable ingredients - pitch, straw, sulphur, mortars and grenades. He planned to put this 'Infernal', as it was known, right next to the harbour walls of Saint Malo. But as the ship came near it struck a rock and held fast, within a pistol shot of the town. Then the ship exploded. The sound was heard 100 miles away yet a witness claimed 'no life was lost except a cat in a gutter'. The explosion was 'terrible beyond description' and it shows how far the English were prepared to go in the name of national security.

SUN 21:00 Rich Hall's Presidential Grudge Match (b0828lpl)

An examination of the sordid machinations involved in becoming president of the United States. Rich Hall looks back at some of the dirtiest and nastiest presidential campaigns of the past, proving that the 2016 race to the White House is not the first time the contest has got personal.

SUN 22:30 Bowie at the BBC (b0888f7r)

A chronology of clips from the BBC archive giving an overview of David Bowie's extraordinary career from 1964 to 2016. Blending interviews and performances from music programmes, documentaries, news outlets and chat shows, this portrait of Bowie both at his most thoughtful and his most opportunistically promotional is a series of snapshots into a rapidly evolving career across music, films and the theatre.

From a 17-year-old David Jones interviewed by Cliff Michelmore in 1964, on to 1973 when in Ziggy mode Bowie, Ronson and co gave their seminal Top of the Pops performance of Starman, and then to 2000 when Bowie reimagined himself as the cover of Hunky Dory to storm Glastonbury, this is a journey through many Bowies.

The programme includes other classic Top of the Pops, The Old Grey Whistle Test and Later... with Jools' performances and looks at Bowie the actor with interviews about his roles in The Elephant Man, Merry Christmas Mr Lawrence and Labyrinth.

Bowie at the BBC gives an insight into the many ways Bowie chose to present himself at different moments in time, revealing how innovative, funny, surprising and influential he always was.

SUN 23:30 John Berger: The Art of Looking (b082qynq)

Art, politics and motorcycles - on the occasion of his 90th birthday, this is an intimate portrait of the late writer and art critic whose groundbreaking work on seeing has shaped our understanding of the concept for over five decades. The film explores how paintings become narratives and stories turn into images, and rarely does anybody demonstrate this as poignantly as Berger.

Berger lived and worked for decades in a small mountain village in the French Alps, where the nearness to nature, the world of the peasants and his motorcycle, which for him deals so much with presence, inspired his drawing and writing.

The film introduces Berger's art of looking with theatre wizard Simon McBurney, film director Michael Dibb, visual artist John Christie, cartoonist Selçuk Demiral and photographer Jean Mohr, as well as two of his children - film critic Katya Berger

and the painter Yves Berger.

The prelude and starting point is Berger's mind-boggling experience of restored vision following a successful cataract removal surgery. There, in the cusp of his clouding eyesight, Berger re-discovers the irredeemable wonder of seeing.

Realised as a portrait in works and collaborations, this creative documentary takes a different approach to biography, with Berger leading in his favourite role of the storyteller.

SUN 00:25 Sound of Musicals with Neil Brand (b0888r7n)
Oh, What a Beautiful Mornin'

Series in which composer Neil Brand explores how musical theatre evolved over the last 100 years to become today's global phenomenon. Neil hears the inside story from leading composers and talent past and present, and recreates classic songs, looking in detail at how these work musically and lyrically to captivate the audience.

In the first episode, Neil finds out how the modern shape of the musical was established through a series of pioneering works, from Jerome Kern and Oscar Hammerstein's Show Boat in the 1920s with its bold take on America's racial divide and innovative use of songs that further the narrative, to Alan Jay Lerner and Frederick Loewe's My Fair Lady, which made a star of Julie Andrews in the late 1950s. Neil also reveals the songwriting secrets of some much-loved numbers, including Ol' Man River, Oh, What a Beautiful Mornin', and If I Loved You.

SUN 01:25 Lost Kingdoms of Central America (b04j8st0)
[Repeat of broadcast at 21:00 on Saturday]

SUN 02:25 Roger Bannister: Everest on the Track (b071xs4s)

On 6 May 1954, Roger Bannister became the first man to run a mile in under four minutes. He was the epitome of Britain's disappearing scholar-athlete ideal.

The lunchtime-trained runner, immersed in his medical school studies, injected a booster shot into Britain's flagging but still flickering morale. This documentary is as much an historical study of Britain's search for something to erase the woes of the Second World War as it is a fresh look at the story of the quest for the first four-minute mile, previously deemed physically impossible. The story is told by Sir Roger himself, his rival John Landy, Seb Coe and the late Chris Chataway - Bannister's friend and pacesetter - among many others.

MONDAY 16 JANUARY 2017

MON 19:00 World News Today (b0888qs6)

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

MON 19:30 Grand Tours of Scotland (b01mzgzc)

Series 3

A Bed for the Night

The search for a comfortable bed for the night is a challenge that has faced tourists coming to Scotland for two centuries. Some early traveller accounts are very complimentary about the hospitality they received while others are not quite so favourable, and the same could probably be said by tourists today.

In this episode, Paul Murton travels from the shores of the Firth of Forth into the depths of rural Perthshire, and his trip requires him to bed down in everything from a hippy yurt to the exclusive Lochnagar suite at the Gleneagles Hotel.

MON 20:00 Swarm: Nature's Incredible Invasions (b00gq43y)

One Million Heads, One Beautiful Mind

Extraordinary photography reveals the incredible swarm intelligence that lies behind animal invasions.

Millions of free-tailed bats form a living tornado in which complex information is exchanged. Huge shape-shifting shoals of herring use swarm intelligence to detect predators. Billions of alkali flies form a rolling wave to evade the gaping mouths of gulls. Vast numbers of shore birds synchronise their migration with swarming horseshoe crabs, a feat of timing unparalleled in the animal world.

Fire ants invade and destroy computer equipment and, when their nest is flooded, create living rafts with their bodies. Inside a driver ants' nest we discover the inner workings of a brain made from thousands of individuals. One swarm is even helping

to save the planet from the greenhouse effect.

Incredible images show the true complexity of the swarm and how their intelligence impacts on our world.

MON 21:00 Storyville (b08bcc18)

Zero Days: Nuclear Cyber Sabotage

Documentary thriller about warfare in a world without rules - the world of cyberwar. It tells the story of Stuxnet, self-replicating computer malware, known as a 'worm' for its ability to burrow from computer to computer on its own. In a covert operation, the American and Israeli intelligence agencies allegedly unleashed Stuxnet to destroy a key part of an Iranian nuclear facility. Ultimately the 'worm' spread beyond its intended target.

Zero Day is the most comprehensive account to date of how a clandestine mission opened forever the Pandora's box of cyber warfare. A cautionary tale of technology, politics, unintended consequences, morality, and the dangers of secrecy.

MON 22:30 How It Works (b01fkc5n)

Metal

Professor Mark Miodownik travels to Israel to trace the history of our love affair with gleaming, lustrous metal. He learns how we first extracted glinting copper from dull rock and used it to shape our world and reveals how our eternal quest for lighter, stronger metals led us to forge hard, sharp steel from malleable iron and to create complex alloys in order to conquer the skies.

He investigates metals at the atomic level to reveal mysterious properties such as why they get stronger when they are hit, and he discovers how metal crystals can be grown to survive inside one of our most extreme environments - the jet engine.

MON 23:30 Gods and Monsters: Homer's Odyssey (b00vtwnz)

Virginia Woolf said that Homer's epic poem the Odyssey was 'alive to every tremor and gleam of existence'. Following the magical and strange adventures of warrior king Odysseus, inventor of the idea of the Trojan horse, the poem can claim to be the greatest story ever told. Now British poet Simon Armitage goes on his own Greek adventure, following in the footsteps of one of his own personal heroes. Yet Simon ponders the question of whether he even likes the guy.

MON 00:30 David Starkey's Music and Monarchy (b037x4sh)

[Repeat of broadcast at 19:00 on Sunday]

MON 01:30 The King & the Playwright: A Jacobean History (b01hdf7m)

Legacy

The concluding part of Professor James Shapiro's history of Shakespeare in the reign of King James I. Shakespeare's late plays, such as The Winter's Tale and The Tempest, are often seen as mellow swansongs. Professor Shapiro gives us a different Shakespeare - a playwright still experimenting and alert to the troubled Jacobean world around him. He closes the series by reflecting on the legacies of king and playwright.

MON 02:30 Storyville (b08bcc18)

[Repeat of broadcast at 21:00 today]

TUESDAY 17 JANUARY 2017

TUE 19:00 World News Today (b088sqtf)

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

TUE 19:30 Grand Tours of Scotland (b01n4ds9)

Series 3

From Burns to Butlins

Paul Murton visits the places connected to the life of one of the first global superstars - Robert Burns - the man who made Ayrshire famous. Paul's 'grand tour' takes him from Alloway, following the Burns Trail to Mauchline, before heading for the coast and discovering the delights of Butlins, bathing and betting.

TUE 20:00 The Golden Age of Canals (b01173hf)

Most people thought that when the working traffic on canals faded away after the war, it would be the end of their story. But they were wrong. A few diehard enthusiasts and boat owners

campaigned, lobbied and dug, sometimes with their bare hands, to keep the network of narrow canals open.

Some of these enthusiasts filmed their campaigns and their home movies tell the story of how, in the teeth of much political opposition, they saved the inland waterways for the nation and, more than 200 years after they were first built, created a second golden age of the canals.

Stan Offley, an IWA activist from Ellesmere Port, filmed his boating trips around the wide canals in the 40s, 50s and 60s in 16mm colour. But equally charming is the film made by Ed Frangleton, with help from Harry Arnold, of a hostel boat holiday on the Llangollen Canal in 1961. There are the films shot by ex-working boatman Ike Argent from his home in Nottinghamshire and looked after by his son Barry.

There is astonishing film of the last days of working boats, some shot by John Pyper when he spent time with the Beecheys in the 60s, film taken by Keith Christie of the last days of the cut around the BCN, and the films made by Keith and his mate Tony Gregory of their attempts to keep working the canals through their carrying company, Midland Canal Transport.

There is film of key restorations, the Stourbridge 16 being talked about with great wit and affection by one of the leading activists in that watershed of restorations in the mid-60s, David Tomlinson, and John Maynard's beautiful films of the restoration of the Huddersfield, 'the impossible restoration', shot over two decades.

All these and more are in the programme alongside the people who made the films and some of the stars of them. Together they tell the story of how, in the years after 1945, a few people fought the government like David fought Goliath to keep canals open and restore ones that had become defunct, and won against all the odds.

TUE 21:00 Britain Beneath Your Feet (b0619k6l)

Series 1

Building Britain

This series is a unique view of Britain - from below. In this first of two programmes, Dallas Campbell reveals why we can only understand the familiar world around us by discovering the hidden wonders beneath our feet. Breathtaking computer graphics strip away the earth to lay bare this secret world that's rarely explored.

Dallas finds out how the Shard of London - the tallest skyscraper in Western Europe - stays standing on soft clay. He canoes along a secret river under the city of Bristol and discovers why Edinburgh was sited on an ancient volcano. Exploring the natural world, he abseils down an underground waterfall higher than Niagara. And beneath one of the nation's oldest oak trees, he discovers a vast root system that's wider and more intricate than its branches.

TUE 22:00 Horizon (b03tz705)

2013-2014

Swallowed by a Sinkhole

In February 2013, a hole opened up beneath a home in Florida and swallowed a man.

Jeff Bush was asleep when a sinkhole opened up beneath his bedroom. Despite the efforts of his brother to rescue him, Jeff was never seen again and his body was never recovered.

Professor Iain Stewart travels to Florida to try and understand what killed Jeff, and why the geology of this state makes it the sinkhole capital of the world.

TUE 23:00 Storyville (b062xfv0)

Circus Elephant Rampage

The gripping and emotionally-charged story of Tyke, a circus elephant who went on a rampage in Honolulu, Hawaii, in 1994, killed her trainer in front of thousands of spectators and died in a hail of gunfire.

Her break for freedom - filmed from start to tragic end - traumatised a city and ignited a global battle over the use of animals in the entertainment industry. Looking at what made Tyke snap, the film goes back to meet the people who knew her and were affected by her death - former trainers and handlers, circus industry insiders, witnesses to her rampage, and animal rights activists for whom Tyke became a global rallying cry.

Tyke is the central protagonist in this tragic but redemptive tale that combines trauma, outrage, insight and compassion. This moving documentary raises fundamental questions about our deep and mysterious connection to other species.

TUE 23:55 A Very British Renaissance (b0406bmk)
Whose Renaissance?

Art historian Dr James Fox continues his exploration of a Renaissance that he believes was as rich and as significant in Britain as it was in Italy and Europe. He tells the story of the painters, poets, playwrights, composers, inventors, craftsmen and scientists who revolutionised the way we saw the world.

In the final episode, he explores how the tension between two cultures - one courtly, classical and European, the other home-grown, innovative and vital - helped bring the country to civil war.

TUE 00:55 How the Devil Got His Horns: A Diabolical Tale (b01nmt3q)

Art historian and critic Alastair Sooke reveals how the Devil's image was created by artists of the Middle Ages. He explores how, in the centuries between the birth of Christ and the Renaissance, visual interpretations of the Devil evolved, with the embodiment of evil appearing in different guises - tempter, tyrant, and rebellious angel. Alastair shows how artists used their imaginations to give form to Satan, whose description is absent from the Bible.

Exploring some of the most remarkable art in Europe, he tells the stories behind that art and examines the religious texts and thinking which inspired and influenced the artists. The result is a rich and unique picture of how art and religion have combined to define images of good and evil.

TUE 01:55 A Very English Winter: The Unthanks (b01pdsvd)

Rachel and Becky Unthank continue their journey around England's hidden customs and dance traditions and into the dark heart of its winter pastimes. The follow-up to Still Folk Dancing After All These Years, which explored English folk dances from spring to harvest, this film explores English folk customs around the country though the other six months of the year.

Two hundred years of political intrigue and clashes with police authorities in Lewes on Guy Fawkes Night have created an awe-inspiring procession of burning popes and other effigies of the enemies of the bonfire, not to mention a heavy police presence to this day. Throwing the Yorkshire carols of Sheffield out of the church repertoire has only served to enhance the heart-stopping show of unrestrained joy found in the powerful singing at the Royal Hotel pub in Dungworth.

The longsword dancers of the North East and molly dancers of East Anglia, who have gone collecting funds each year, are a reminder that no higher power puts food on the plate. Just as these customs rely on the communities themselves to mark each point with song, remembrance and a gathering together, the very need to survive lies in the hands of your neighbour.

The Unthanks discover these stories through singing, dancing, meeting people who have grown up with these traditions and trying not to get set on fire.

TUE 02:55 Britain Beneath Your Feet (b0619k6l)
[Repeat of broadcast at 21:00 today]

WEDNESDAY 18 JANUARY 2017

WED 19:00 World News Today (b088sqv6)

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

WED 19:30 Grand Tours of Scotland (b01n8v0c)
Series 3

It's Just Like Switzerland

By the end of the Victorian era, Scotland had become a favourite summer holiday destination. But what happened when the chill winds of winter began to blow and the tourists packed their bags and headed for home? In this final episode, Paul Murton travels from the icy shores of the Lake of Mentelith to the summit of Britain's highest and most wintry mountain, Ben Nevis, to discover how Scotland was first promoted as a winter holiday destination - after all, 'it's just like Switzerland' - isn't it?

WED 20:00 Natural World (b04g4qm5)
2014-2015

Attenborough's Fabulous Frogs

As a boy, frogs were the first animals Sir David Attenborough kept and today he is still just as passionate about them. Through his eyes, the weird and wonderful world of frogs is explored,

shedding new light on these charismatic, colourful and frequently bizarre creatures.

David reveals all aspects of the frogs' life, their anatomy, their extraordinary behaviour and their ability to live in some of the most extreme places on the planet, as he goes on an eye-opening journey into the fabulous lives of frogs.

WED 21:00 James May: The Reassembler (b088syhb)
Series 2

Portable Record Player

Back in the 1950s listening to music meant sitting around with your mum and dad and having to listen to whatever drivel they wanted, but thankfully along came the portable record player, which helped give birth to the teenager and a magical music revolution.

James May reassembles the past to hear what it sounded like as he pieces together the 195 parts of the game-changing 1963 Dansette Bermuda portable record player.

James reminisces about his teenage years and what it was like growing up in the 1970s as he takes us on a journey through sound and mechanical wonderment. James falls in love with the beautiful mechanisms that lie in the belly of the beast, finds the perfect solution to his soldering dilemma and has a rather exciting new screwdriver to show us.

WED 21:30 Play it Loud: The Story of the Marshall Amp (b04c317j)

One iconic black box has probably more than anything else come to define the sound of rock - the Marshall amplifier. It has been, quite literally, behind some of the greatest names in modern music.

It all started in 1962 when drum shop owner Jim Marshall discovered the distinctive growl that gave the electric guitar an exciting new voice. Music got a whole lot louder as young musicians like Clapton, Townshend and Hendrix adopted the revolutionary 'Marshall Sound'. The electric guitar now spoke for a new generation and the genre of rock was born.

Soon Marshall stacks and walls were an essential backdrop of rock 'n' roll. The excesses of rock machismo were gloriously lampooned in the 1984 movie This is Spinal Tap. In an extraordinary piece of reverse irony, it was this comic exposure that rescued the company from financial meltdown.

With contributions from rock legends like Pete Townshend, Lemmy and Slash, plus an interview with the 'Father of Loud' Jim Marshall, this documentary cruises down the rock ages with all the dials set to 'eleven'.

WED 22:30 Autism: Challenging Behaviour (b03gynvm)

Documentary which explores the controversy around ABA (Applied Behaviour Analysis), an intensive intervention used to treat autism. Parents who want ABA for their children passionately believe that it is the best way to teach a child new skills and to help them function in mainstream society, but critics of ABA argue that it is dehumanising and abusive to try to eliminate autistic behaviour.

The film follows three-year-old Jack and four-year-old Jeremiah through their first term at Treetops School in Essex - the only state school in the UK which offers a full ABA programme. Neither boy has any language, Jeremiah finds it hard to engage with the world around him and Jack has severe issues with food. Both their parents have high hopes of the 'tough love' support that Treetops offers, but will struggle with their child's progress.

We also meet Gunnar Frederiksen, a passionate and charismatic ABA consultant who works with families all over Europe. His view of autism - that it is a condition that can be cured and that families must work with their child as intensively and as early as possible if they want to take the child 'out of the condition' - is at odds with the way that many view autism today.

Gunnar is working with three-year-old Tobias in Norway and has trained the parents so that they can work with him at home as his ABA tutors. He also introduces us to Richard, a 16-year-old from Sweden who was diagnosed with autism at the age of three and whose parents were told that he would be unlikely ever to speak. Today, Richard is 'indistinguishable from his peers' and plays badminton for the Swedish national team. In an emotional scene, Richard and his family look back at video recordings of the early ABA treatment and we are confronted both by the harshness of the method and the result of the intervention.

These and other stories are intercut with the views and experiences from those who oppose ABA and who argue that at the heart of ABA is a drive to make children with autism as normal as possible, rather than accepting and celebrating their

difference. Lee, an autistic mother of a son who has Aspergers, describes how the drive to make her behave and act like a 'normal' child broke her, and how she was determined to accept her son for who he was.

The question of how far we accept autistic difference and how much should we push people with autism to fit into society's norms raises wider questions that affect us all - how do we achieve compliance in our children, how much should we expect children to conform and how far should parents push children to fit in with their own expectations?

WED 23:30 The Secret Rules of Modern Living: Algorithms (p030s6b3)

Without us noticing, modern life has been taken over. Algorithms run everything from search engines on the internet to satnavs and credit card data security - they even help us travel the world, find love and save lives.

Mathematician Professor Marcus du Sautoy demystifies the hidden world of algorithms. By showing us some of the algorithms most essential to our lives, he reveals where these 2,000-year-old problem-solvers came from, how they work, what they have achieved and how they are now so advanced they can even programme themselves.

WED 00:30 Timeshift (b03gtg7g)
Series 13

When Coal Was King

Timeshift explores the lost world of coal mining and the extraordinarily rich social and cultural lives of those who worked in what was once Britain's most important industry. It's a story told through a largely forgotten film archive that movingly documents the final years of coal's heyday from the 1940s to the 1980s. One priceless piece of footage features a ballet performance by tutu-wearing colliers.

Featuring contributions from those who worked underground, those who lived in the pit villages, those who filmed them at work and at play and those - like Billy Elliot writer Lee Hall - who have been inspired by what made coalfield culture so unique.

Narrated by Christopher Eccleston.

WED 01:30 Natural World (b04g4qm5)
[Repeat of broadcast at 20:00 today]

WED 02:30 Autism: Challenging Behaviour (b03gynvm)
[Repeat of broadcast at 22:30 today]

THURSDAY 19 JANUARY 2017

THU 19:00 World News Today (b088sqw6)

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

THU 19:30 Top of the Pops (b0894fnq)

Janice Long and Gary Davies present the weekly look at the pop charts, first broadcast on 20 January 1983. Featuring appearances from Kajagoogoo, Joe Jackson, Echo and the Bunnymen, Melba Moore, U2, Laura Branigan, The Stranglers, Phil Collins and Billy Griffin.

THU 20:00 A Timewatch Guide (b06zww45j)
Series 2

The Crusades

Historian Dr Thomas Asbridge explores the BBC's archive to reveal how television's telling of the Crusades has changed over the last 60 years. Using footage from Crusade documentaries shot during the Vietnam era, the Palestinian Crisis, the First Gulf War and the more recent War on Terror, he reveals how our interpretation of this medieval story has been influenced by modern political and social change. Thomas highlights the alternative Arabic perspectives on the Crusades, and asks whether this 1,000-year-old story really does cast its long shadow over the modern world, as so many have claimed.

With contributions from Monty Python star and medievalist Terry Jones, Washington economist JK Galbraith, and historians Simon Sebag Montefiore, Dr Peter Frankopan, Prof Konrad Hirschler and Dr Fozia Bora.

THU 21:00 Sword, Musket & Machine Gun: Britain's Armed History (b088sznj)
Rapid Fire

In the concluding episode, Dr Sam Willis charts the evolution of weaponry in Britain from 1800 to the First World War, looking at the drive to develop ever more precise weapons, from artillery shells to rifles to the Maxim machine gun.

The pace of technological change in the 19th century was phenomenal. Sam test-fires a 'Brown Bess' musket, the infantry weapon of choice at Waterloo in 1815 and discovers that a well-trained soldier could fire up to three shots a minute. He also looks at efforts to make artillery more effective on the battlefield with the invention of spherical case shot, a new type of shell that was named after its inventor - Henry Shrapnel.

Sam finds out how accessible firearms were to the public in the early 19th century and tells the little-known story of Spencer Percival, the only British prime minister ever to be assassinated, shot at point blank range in the lobby of the House of Commons in 1812.

By the turn of the 20th century, several inventors believed that they could banish war if they invented the ultimate weapon, an instrument so horrific that no-one would dare use it. In the 1880s, Hiram Maxim, an American inventor, devised the first 'Maxim' machine guns in his workshop in Hatton Garden, London. The first rapid-fire weapon to harness the energy of its own recoil, the Maxim gun, and its successor the Vickers machine gun, could fire 600 rounds a minute and were used to devastating effect on the battlefields of the First World War.

Automatic weapons were also sought by criminal gangs, as Sam discovers when he looks back at one of the most infamous sieges of the 20th century - the Siege of Sidney Street in 1911.

The series culminates in a remarkable experiment to find out whether a bulletproof vest made of silk might have stopped a bullet fired at Archduke Franz Ferdinand. With the aid of the Royal Armouries, Sam conducts a unique experiment with assistant firearms curator Lisa Traynor to prove that a bulletproof vest owned by the archduke would have stopped a bullet fired by his assassin, Gavrilo Princip. The killing of the archduke on June 28 1914 set in motion a chain of events that led to the outbreak of the First World War.

World War I was the deadliest war of its age, with the most technologically advanced firearms and weapons of almost medieval brutality used to wage a devastating conflict. When the firing finally stopped on November 11, 1918, an estimated 17 million people had died and 20 million had been wounded. In the aftermath of World War I, we now put increasing faith in treaties, international conventions and diplomacy. Surely we could never allow such carnage to happen again?

THU 22:00 Churchill's First World War (b037w3bj)

Drama-documentary about Winston Churchill's extraordinary experiences during the Great War, with intimate letters to his wife Clementine allowing the story to be told largely in his own words. Just 39 and at the peak of his powers running the Royal Navy, Churchill in 1914 dreamt of Napoleonic glory, but suffered a catastrophic fall into disgrace and humiliation over the Dardanelles disaster.

The film follows his road to redemption, beginning in the trenches of Flanders in 1916, revealing how he became the 'godfather' of the tank and his forgotten contribution to final victory in 1918 as Minister of Munitions. Dark political intrigue, a passionate love story and remarkable military adventures on land, sea and air combine to show how the Churchill of 1940 was shaped and forged by his experience of the First World War.

THU 23:30 Rich Hall's Presidential Grudge Match (b0828lp1)

[Repeat of broadcast at 21:00 on Sunday]

THU 01:00 Horizon (b03tz705)

[Repeat of broadcast at 22:00 on Tuesday]

THU 02:00 Top of the Pops (b0894fnq)

[Repeat of broadcast at 19:30 today]

THU 02:35 Sword, Musket & Machine Gun: Britain's Armed History (b088sznj)

[Repeat of broadcast at 21:00 today]

FRIDAY 20 JANUARY 2017

FRI 19:00 World News Today (b088sqwx)

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

FRI 19:30 Top of the Pops (b0894ftx)

Simon Bates and Richard Skinner present the weekly look at the pop charts, first broadcast on 27 January 1983. Features Level 42, The Belle Stars, Central Line, The Beatles, China Crisis, Wham!, Bauhaus, Joe Cocker & Jennifer Warnes, Dire Straits and Men at Work.

FRI 20:00 The Good Old Days (b088t0kg)

Leonard Sachs presents the old-time music hall programme, first broadcast on 10th March 1977. Features Ron Moody, Teresa Brooke, Melanie Munro, Arthur Askey, Josef Locke and Aimi MacDonald, as well as members of the Players' Theatre.

FRI 21:00 Sound of Musicals with Neil Brand (b088t0kj) Something's Coming

Neil Brand explores how a new generation of composers transformed musical theatre by embracing more gritty, challenging subjects, from the mean streets of 1950s New York in West Side Story, to the Dickensian London of British blockbuster Oliver!. Neil learns the stories behind Broadway hits Fiddler on the Roof and A Chorus Line, and celebrates the groundbreaking work of Stephen Sondheim. And Neil takes us step by step through the secrets of some classic numbers with the help of star performers Robert Lindsay and Frances Ruffelle.

FRI 22:00 Hello Quo (b03hy6vp)

You don't sell 128 million albums worldwide without putting in the graft and Status Quo are, quite possibly, the hardest-working band in Britain. Alan G Parker's documentary Hello Quo, specially re-edited for the BBC, recounts the band's epic story from the beginning - when south London schoolmates Francis Rossi and Alan Lancaster formed their first band with big ambitions of rock 'n' roll domination, quickly adding drummer John Coghlan and guitarist Rick Parfitt.

The film tells the story of Quo's hits from their unusually psychedelic early hit, Pictures of Matchstick Men, followed by a run through their classics from Down Down to Whatever You Want.

The band laughs off the constant ribbing about only using three chords and the film explores how Quo's heads-down boogie defined UK rock in the early 70s. Fender Stratocaster in hand, Quo have stood their ground and never shifted, but they have managed to adapt to scoring pop hits over five decades.

The original members of the 'frantic four' tell their story of a life in rock 'n' roll, alongside interviews from some prominent Quo fans, such as Paul Weller, whose first gig was the Quo at Guildford Civic Hall, to Brian May, who waxes lyrically about the opening riff to Pictures of Matchstick Men, while even Sir Cliff plays homage to the denim-clad rockers.

FRI 23:20 Status Quo: Live and Acoustic (b052yq1f)

Throughout Status Quo's six decades of rockin' and double denim, they have notched up 65 hit singles, sold over 100m records worldwide and have spent 415 weeks in the British singles chart, so it's no wonder Francis Rossi and Rick Parfitt were awarded OBEs in 2010 for their services to music. And now, in a rare departure from their usual heads-down and boogie approach, they've gone acoustic!

Autumn 2014 saw the release of their 31st studio album and, in a complete departure from their usual rock sound, they transformed many of their legendary songs into acoustic, stripped-down versions. To celebrate this unique enterprise, they then performed many of the songs live at north London's legendary Roundhouse. Sitting down!

This concert features many of their classic tracks including Pictures of Matchstick Men, Down Down, What You're Proposing, Whatever You Want, Margarita Time, Rockin' All Over the World and many more, performed with a string section, percussion, accordion, backing vocals and a front line of five acoustic guitars. Throughout the show Francis and Rick reminisce about taking this bold step and remind us of some of the stories behind some of their classic songs.

FRI 00:20 Top of the Pops (b0894ftx)

[Repeat of broadcast at 19:30 today]

FRI 01:00 Sound of Musicals with Neil Brand (b088t0kj)

[Repeat of broadcast at 21:00 today]

FRI 02:00 Hello Quo (b03hy6vp)

[Repeat of broadcast at 22:00 today]